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IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

DONALD J. BEARDSLEE,

Plaintiff,

v.

JEANNE S. WOODFORD, Director of the Department of Corrections, JILL L. BROWN, Acting Warden of the California State Prison at San Quentin, and DOES 1-50.

Defendants.

Case No.: C 04 5381 JF

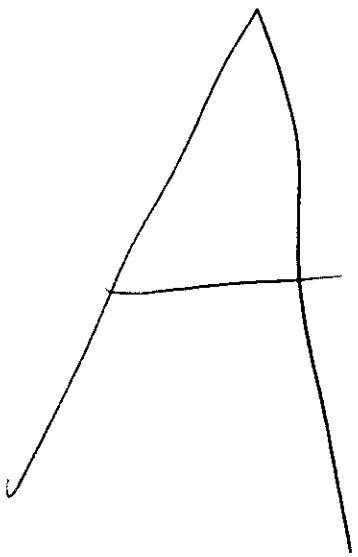
DEATH PENALTY CASE: EXECUTION DATE SET

EXHIBITS IN SUPPORT OF PLAINTIFF'S MOTION FOR TEMPORARY RESTRAINING ORDER, PRELIMINARY INJUNCTION AND ORDER TO SHOW CAUSE: VOLUME 1

EMERGENCY ACTION REQUESTED

INDEX OF EXHIBITS

INDEX OF EXHIBITS (cont.)



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Defendants.

Case No. _____

DECLARATION OF DR. MARK HEATH

The undersigned, Dr. Mark Heath, hereby declares under penalty of perjury as follows:

1. I am an Assistant Professor of Clinical Anesthesiology at Columbia University in New York City. I received my Medical Doctorate degree from the University of North Carolina at Chapel Hill in 1986 and completed residency and fellowship training in Anesthesiology in 1992 at Columbia University Medical Center. I am Board Certified in Anesthesiology, and am licensed to practice Medicine in New York State. My work consists of approximately equal parts of performing clinical anesthesiology, teaching residents, fellows and medical students, and managing a neuroscience laboratory. As a result of my training and research I am familiar and proficient with the use and pharmacology of the chemicals used to perform lethal injection.

2. Over the past several years, as a result of concerns about the mechanics of lethal injection in some states, I have performed several hundred hours of research into the techniques that are used during this procedure. I have been admitted as an expert medical witness in courts in Georgia, Tennessee, Pennsylvania, Virginia, and Louisiana. I have filed affidavits that have been reviewed by courts in the above states and also Kentucky, New York, Alabama, Maryland, North Carolina, South Carolina, Ohio, Oklahoma, Tennessee, Texas, and by the United States Supreme Court. During court proceedings, I have heard testimony from prison wardens who are responsible for conducting executions by lethal injection. I have testified before the Nebraska Senate Judiciary Committee regarding proposed legislation to adopt lethal injection. I have testified before the Pennsylvania Senate Judiciary Committee regarding proposed legislation to remove pancuronium from Pennsylvania's lethal injection protocol. My research regarding lethal injection has involved both extensive conversations with recognized experts in the field and personal correspondence with the individuals responsible for introducing lethal injection as a method of execution in Oklahoma (the first state to formulate the procedure), and the United States. I have also appeared as an expert before this Court, by way of declaration, in the case of Kevin Cooper, which was first heard in this Court

approximately a year ago.

3. My qualifications are further detailed in my curriculum vitae, a copy of which is attached hereto as Exhibit A and incorporated by reference as if fully rewritten herein.

4. I have been asked by counsel for Donald Beardslee to review the procedures concerning lethal injection in California and to render an opinion as to whether or not they comply with appropriate medical standards for such a procedure, and to determine the likelihood that the lethal injection procedure California employs creates medically unacceptable risks of inflicting excruciating pain and suffering on inmates during the lethal injection procedure. The opinions expressed in this Declaration are ones that I hold to a reasonable degree of medical certainty.

5. I have reviewed a version of the San Quentin Operational Procedure 770, revised date June 13, 2003 ("Procedure 770"). My understanding from counsel is that there is a concern that parts of this document may have been withheld. I have also reviewed the San Quentin website that describes the lethal injection procedures not contained in Procedure 770, which is very unusual in that one would expect the medical process to be fully contained within the official protocol if that protocol was to be followed. It may be that the remainder of 770 that has not been released contains this information. There is a reference in 770 to the lethal injection procedure, which is nowhere else described. The disjointed promulgation of medical regulations, and placing such important features of the process on the internet rather than in the official text, if true, raises concern about who is determining what the process should entail, and whether they have any medical training and are making decisions based on sound medical principles.

6. In addition, I have reviewed the execution logs for Keith Daniel Williams, William Bonin, Jaturun Siripongs, and Manuel Babbitt. I have also reviewed the Declaration of Margo Rocconi, Esq., who witnessed the last execution at San Quentin, that of Stephen Anderson, as well as the exhibits contained in the case *Kevin Cooper v. Woodford*, No. C 04 436 JF, including the February 3, 2004 Declaration of Dr. Mark

Dershwitz and the January 12, 2004 Declaration of Dr. Carl Rosow. I have also reviewed toxicology reports for several executed prisoners from Arizona, Kentucky, North Carolina, and South Carolina. I have reviewed 16 California Code of Regulations Section 2039, which pertains to the euthanasia training for those performing euthanasia on animals, as well as statutes pertaining to euthanasia of animals from the following states: Florida, Georgia, Maine, Maryland, Massachusetts, New Jersey, New York, Oklahoma, Tennessee, Texas, Connecticut, Delaware, Illinois, Kansas, Kentucky, Louisiana, Missouri, Rhode Island and South Carolina. I have also reviewed the American Veterinary Medical Association's 2000 Report of the Panel on Euthanasia.

7. Based upon my review of this material and my knowledge of and experience in the field of anesthesiology, I have formed several conclusions with respect to the California Department of Corrections' ("CDC") plans for carrying out lethal injections. These concerns arise both from the details disclosed in the materials I have reviewed, and from medically relevant, logical inferences drawn from the omission of details in those materials (*e.g.*, details regarding the training of the personnel involved; details of all of the medical equipment used; and details of the precise methods by which the personnel involved use the equipment to carry out an execution by lethal injection).

The Use of Sodium Pentothal

8. A major concern I have based on what I know about California's lethal injection protocol relates to the use of sodium pentothal. Sodium pentothal, which is a brand name for the drug sodium thiopental, is an ultrashort-acting barbiturate with a short shelf life in liquid form. Sodium pentothal is distributed in powder form to increase its shelf life; it must be mixed into a liquid solution by trained personal before it can be injected.

9. When anesthesiologists use sodium pentothal, we do so for the purposes of temporarily anesthetizing patients for sufficient time to intubate the trachea and institute mechanical support of ventilation and respiration. Once this has been achieved, additional drugs are administered to maintain a "surgical depth" or "surgical plane" of anesthesia (*i.e.*, a level of anesthesia deep enough to ensure that a surgical patient feels no

pain and is unconscious.) The medical utility of sodium pentothal derives from its ultrashort-acting properties: if unanticipated obstacles hinder or prevent successful intubation, patients will quickly regain consciousness and is likely to quickly regain consciousness and resume ventilation and respiration on their own.

10. Significantly, the AVMA Panel states that when Potassium Chloride is to be used in as a euthanasia agent, the animals must be under a surgical plane of anesthesia and the personnel performing the euthanasia must be properly trained to assess the depth of anesthesia. The AVMA panel specifically states that the animal must be in a surgical plane of anesthesia characterized not simply by loss of consciousness, but "loss of reflex muscle response and loss of response to noxious stimuli". Moreover, the California Code of Regulations require that personnel who perform euthanasia must be properly trained by veterinarians or registered veterinary nurses in the procedure. No such requirement exists in Procedure 770. Additionally, the AVMA recommends that sodium pentobarbital be used as an anesthetic, which is much longer lasting and more stable than sodium pentothal. Therefore, it appears to me that Procedure 770 fails to comport with the AVMA standards set forth for euthanasia of animals.

11. As with most drugs, a person's individual physical characteristics and medical history, including any medications they may have taken, causes the inmate to react differently to the chemicals. California's failure to account for each inmate's physiological attributes increases the probability that the inmate will not be unconscious when the other chemicals are administered causing the inmate to suffer an excruciatingly painful death.

12. The benefits of sodium pentothal in the operating room engender serious risks in the execution chamber. Based on the information I have available to me concerning California's execution protocol, a five (5) gram dose of sodium pentothal is apparently administered in a single injection from a single syringe. The California Department of Corrections website states that 5 grams of sodium pentothal is a lethal dose. I do not dispute this contention. If the full 5 grams of sodium pentothal is properly administered into the prisoner's bloodstream, it is more than sufficient to cause

unconsciousness and, eventually, would cause death if no resuscitation efforts were made. However, my research into executions performed in California and other states indicates that executions have occurred where the full dose of sodium pentothal was not fully and properly administered.

13. It should be noted that many of the concerns raised in this affidavit apply regardless of the dose of sodium pentothal that is set forth by the protocol. The level of anesthesia, if any, achieved in the inmate depends on the amount that is successfully administered, and there are many foreseeable situations in which the current protocol may fail in successfully administering the intended dose. To list a few examples, the IV tubing may leak or become disconnected; the guard administering the drug may forget or may not know to pinch the IV tubing to direct the flow of the drug to the inmate; the individual administering the drug may turn the 3-way stopcock in the wrong direction and thereby direct the drug into the IV bag instead of to the inmate; the IV cannula may dislodge and fall out of the inmate's arm or leg (and not be seen under the sheet); the IV cannula may be infiltrated so that the drug enters the inmate's body, but does not enter the vein and is not carried by the circulation to the brain; the drug may be improperly mixed, a risk that is increased if improperly trained and credentialed personnel participate in the mixing or handling of the drug; and, the drug may be diluted or diverted by personnel intending to use it for purposes of substance abuse. Because of the use of pancuronium and the resultant paralysis of the inmate, it is not possible for witnesses to provide the state or the court with meaningful information that can firmly speak to whether or not any particular execution by lethal injection was cruel and inhumane.

14. This risk has been realized in at least one, and possibly three California executions. The most recent execution, of Stephen Anderson, is described in the Rocconi Declaration. The description is not consistent with successful administration in the bloodstream of a bolus of 5 grams of sodium pentothal that the sodium pentothal and may not have had the desired effect of sedating Mr. Anderson sufficiently, for reasons that cannot be identified without further information. The "normal" or "typical" reaction to

sodium pentothal administration, as commonly seen in the operating room setting, is that the patient's eyelids will drop and close, they may yawn or draw one or two deep breaths, they may exhale visibly so that the cheeks puff out, and then they become motionless. The description provided by the Rocconi Declaration, which describes Mr. Anderson's chest and stomach heaving for more than 30 seconds, does not comport with a successful administration of a large dose of sodium pentothal. The intermittent and irregular heaving of the chest is not compatible with the profound depression of the central nervous system that is the intent of the sodium pentothal administration. The apparent labored respiratory activity strongly suggests that significant central nervous system activity persisted, and indeed is consistent with (although does not prove with certainty) the appearance of a person who was struggling against the development of paralysis induced by pancuronium.

15. The administration of a second dose of pancuronium, as indicated in the execution log of the Bonin execution of February 23, 1996, is a source of great concern. The initial dose of pancuronium would be expected to paralyze an inmate for several hours. Administration of additional pancuronium was presumably performed because of some perceived problem or failure of the first round of drugs. Was there a concern that the inmate was not anesthetized? If so, it is difficult to understand why additional pancuronium was administered, because pancuronium is not an anesthetic drug and it would not address this concern. I am aware that the protocols of other states such as Arizona and Georgia contain provide for a backup dose of sodium pentothal, which is not part of the California Protocol. If there was no concern about whether the inmate was conscious, why was any drug administered? The administration of redundant and inappropriate doses of pancuronium raises enormous concerns about the discipline, logic, medical judgment, and rigor that was applied to the conduct of this execution.

16. The execution of Manuel Babbit also raises grave concerns about whether he was properly sedated. Although I have not seen any witness accounts of the execution, a review of his execution log shows that his heart rate maintained a steady rate of between 95 and 96 beats per minute a full 7 minutes after the sodium pentothal was

administered to him. If the full 5 gram dose of sodium pentothal was properly administered, it is my expectation that there would be significant hemodynamic consequences including a change of heart rate during this time period. Such changes in heart rate occurred with the executions of Keith Daniel Williams, Jaturun Siripongs, and William Bonin in California, according to the logs that I have reviewed. Moreover, the log indicates that he had spasmodic movements of the upper chest after the pancuronium bromide was administered, similar to what was noted during the Stephen Anderson execution, again raising the concern that Mr. Babbit did not properly receive the full 5 grams of sodium pentothal and raises the possibility that he was conscious during the administration of the pancuronium bromide.

17. I have not seen any toxicology or autopsy reports of executed California Prisoners. However, I have reviewed many such reports from prisoners executed in other states.

18. In my review of the toxicology reports completed after several North Carolina executions, I noticed a great variation in the post-mortem barbiturate levels reported. For example, the toxicology report concerning the October 1999 execution of Arthur Boyd reports a post-mortem level of thiopental of 2.6 mg/L. The toxicology report concerning the March 1999 execution of James Rich reports a post-mortem thiopental level of 370 mg/L. The toxicology report concerning the December 2002 execution of Desmond Carter reports only a "trace" post-mortem level of thiopental. 12) This 140-fold variation in post-mortem barbiturate levels amplifies the concern that errors in the administration of sodium thiopental may have occurred during North Carolina executions.

19. I have noticed a similar variation in post-mortem thiopental levels in my review of toxicology reports from South Carolina and Arizona. In both states, approximately a significant number of prisoners executed had post-mortem thiopental levels that, according to Dr. Mark Dershwitz's analysis, raise the concern that they may have been conscious during their executions. It is worth noting that Arizona's lethal injection protocol is quite similar to California's in several respects, including the apparent administration of a 5 gram dose of sodium pentothal. At the time that I submitted my affidavit in the Cooper

case, the post-mortem thiopental levels of individuals executed in other states were not available. If the post-mortem thiopental levels are representative of the thiopental levels present during the execution, there is a grave concern that many of these individuals were conscious during their executions. Similarly, in reviewing the autopsy and toxicology reports of Edward Harper, who was executed in Kentucky, based upon his post-mortem thiopental blood levels, there was a serious concern that he was conscious during his execution and therefore experienced excruciating pain before he died, assuming that the post-mortem thiopental levels were representative of the levels present during the execution.

The Use of Pancuronium Bromide

20. A major concern about the protocol relates to the use of the drug pancuronium bromide. Pancuronium paralyzes all voluntary muscles, but does not affect sensation, consciousness, cognition, or the ability to feel pain and suffocation. According the California Department of Corrections Web site, the levels of sodium pentothal and potassium are to be given in doses sufficient to cause death. Moreover, according to the execution logs of the California prisoners, the substances are injected into the prisoner one shortly after the other. For this reason, it is my opinion held to a reasonable degree of medical certainty that there would be no rational place in the protocol for pancuronium as the lethal amount of potassium chloride is administered well before death would result from the pancuronium alone.

21. Pancuronium bromide is a neuromuscular blocking agent. Its effect is that it renders the muscles unable to contract but it does not affect the brain or the nerves. It is used in surgery to ensure that there is no movement and that the patient is securely paralyzed so that surgery can be performed without contraction of the muscles. Pancuronium bromide is not administered until the patient is adequately anesthetized. The anesthetic drugs must first be administered so that the patient is unconscious and does not feel, see, or perceive the procedure. This can be determined by a trained medical professional, either a physician anesthesiologist or a nurse anesthetist, who provides close and vigilant monitoring of the patient, their vital signs, and various diagnostic indicators of

anesthetic depth. Procedure 770, to the extent disclosed, fails to provide an assurance that anesthetic depth will be properly assessed prior to the administration of pancuronium bromide.

22. If sodium pentothal is not properly administered in a dose sufficient to cause death or at least the loss of consciousness for the duration of the execution procedure, then it is my opinion held to a reasonable degree of medical certainty that the use of pancuronium places the condemned inmate at risk for consciously experiencing paralysis, suffocation and the excruciating pain of the intravenous injection of high dose potassium chloride. Moreover, although there are other cardiotoxins that do not cause such pain, and are used by veterinarians in performing euthanasia, California's protocol specifically requires the use of potassium chloride.

23. Based on the information available to me, it is my opinion held to a reasonable degree of medical certainty that California's lethal injection protocol creates an unacceptable risk that the inmate will not be anesthetized to the point of being unconscious and unaware of pain for the duration of the execution procedure. If the inmate is not first successfully anesthetized, then it is my opinion to a reasonable degree of medical certainty that the pancuronium will paralyze all voluntary muscles and mask external, physical indications of the excruciating pain being experienced by the inmate during the process of suffocating (caused by the pancuronium) and having a cardiac arrest (caused by the potassium chloride).

24. If administered alone, a lethal dose of pancuronium would not immediately cause a condemned inmate to lose consciousness. It would totally immobilize the inmate by paralyzing all voluntary muscles and the diaphragm, causing the inmate to suffocate to death while experiencing an intense, conscious desire to inhale. Ultimately, consciousness would be lost, but it would not be lost as an immediate and direct result of the pancuronium. Rather, the loss of consciousness would be due to suffocation, and would be preceded by the torment and agony caused by suffocation. This period of tortuous suffocation would be expected to last at least minute and would only be relieved by the

onset of suffocation-induced unconsciousness.

25. If taken alone, a lethal dose of potassium chloride would not immediately cause a condemned inmate to lose consciousness. It would first cause excruciating pain as it traveled through the venous system to the heart, and, once it reached the heart, it would cause a painful cardiac arrest that would deprive the brain of oxygen and rather quickly (but not immediately) cause death. If pancuronium were administered prior to the potassium chloride any visible signs of pain or agony caused by the potassium would be completely masked and undetectable to onlookers or witnesses. There is little scientific information regarding the duration of pain a person might experience when injected with potassium chloride. However, according to the execution logs, the time between the beginning of the administration of potassium chloride until when a prisoner is pronounced dead has taken at least two minutes, and in the execution of Jaturun Siripongs, it took 8 minutes. During this time, a prisoner who was not properly sedated would experience excruciating pain in his chest and arm.

26. It is my understanding that California's execution protocol requires the presence of media witnesses to the execution, and permits the presence of witness chosen by the inmate and chosen by the victim's surviving family members. It is my opinion based on a reasonable degree of medical certainty that pancuronium, when properly and successfully administered, effectively nullifies the ability of witnesses to discern whether or not the condemned prisoner is experiencing a peaceful or agonizing death. Regardless of the experience of the condemned prisoner, whether he or she is deeply unconscious or experiencing the excruciation of suffocation, paralysis, and potassium injection, he or she will appear to witnesses to be serene and peaceful due to the relaxation and immobilization of the facial and other skeletal muscles. It goes without saying that the administration of pancuronium bromide will render the inmate unable to communicate to his executioners and the assembled the witnesses the fact that he has not been properly sedated and that he is being tortured.

27. Based on my research into issues related to lethal execution, I know

that there was a time when pancuronium was an acceptable drug for use by veterinarians in the euthanasia of household pets such as dogs and cats; but that the use of pancuronium is now prohibited by many states for precisely the reasons outlined above. Veterinary standards forbid creating the risk that household pets would die while pancuronium masks the type of excruciating pain human beings are exposed to in California's execution protocol. The use of pancuronium fails to comport with even the minimum "standard of decency" regarding the euthanasia of household pets. In my medical opinion, based on a reasonable degree of medical certainty, the use of pancuronium in the lethal injection protocol for executing human beings violates standards of decency designed to prevent the infliction of excruciating pain and suffering on human beings.

28. As stated by the Department of Corrections, and I agree, the doses of sodium pentothal and potassium chloride are lethal doses. Therefore, it is unnecessary to administer pancuronium bromide in the course of an execution when it is quickly followed by a lethal dose of potassium chloride. It serves no legitimate purpose and only places a chemical veil on the process that prevents an adequate assessment of whether or not the condemned is suffering in agony, and greatly increases the risks that such agony will ensue. Removal of pancuronium from the protocol would eliminate the risk of conscious paralysis from occurring. It would also eliminate the risk that an inhumane execution would appear humane to witnesses.

The Lack of Adequate Administration Protocols

29. According to Procedure 770, once the IV lines are inserted into the inmate, the execution chamber is closed and the prisoner is alone in the chamber prior to the administration of the sodium pentothal. Procedure 770 suggests that prison personnel will be in a separate room separated by a window. The lack of any qualified personnel present in the chamber during the execution makes it virtually impossible to ensure that the sodium pentothal is properly flowing into the inmate and that he is properly sedated prior to the administration of the pancuronium bromide.

30. Moreover, as a result of the prisoner being remote and distant from

the executioner during the execution, Procedure 770 employs the use of multiple 72 inch extension sets of tubing. This unnecessarily increases the risk of leakage and/or pinching of the tubes, and therefore creates a greater risk that the inmate will not be properly sedated. Any reasonable standard of care would require a system to be in place to ensure that the prisoner is properly anesthetized.

31. Procedure 770 provides no specifications regarding the timing of the administration of the drugs, thereby compounding the risks I am describing in this Declaration. This concern is greatly amplified by the use of an ultrashort-acting barbiturate. This concern is borne out by a review of the execution records from San Quentin. In each of the executions, the time between administrations varied for no apparent reason. The lack of a defined schedule for the administration of the three drugs compounds the risk the paralytic agent will be active while the sedative effect of the sodium pentothal wears off.

32. California's lethal injection protocol does not account for procedures designed to ensure the proper preparation of the drugs used. I have not seen details regarding the credentials, certification, experience, or proficiency of the personnel who will be responsible for the mixing of the sodium pentothal from powder form, or for the drawing up of the drugs into the syringes. Preparation of drugs, particularly for intravenous use, is a technical task requiring significant training in pharmaceutical concepts and calculations. It is my opinion based on a reasonable degree of medical certainty, and based on my review of lethal execution procedures in states that have disclosed more detailed information than what I have seen about California's procedures, that there exist many risks associated with drug preparation that, if not properly accounted for, further elevate the risk that an inmate will consciously experience excruciating pain during the lethal injection procedures.

33. The information available to me provides inadequate detail regarding the training, credentials, certification, experience, or proficiency of any prison employee, nurse or paramedic who performs the execution procedure. The absence of such detail raises critical questions about the degree to which condemned inmates risk suffering excruciating pain during the lethal injection procedure. It is my opinion based on a

reasonable degree of medical certainty that the correct and safe management of intravenous drug and fluid administration requires a significant level of professional acumen, and can not be adequately performed by personnel lacking the requisite training and experience. The great majority of nurses are not trained in the use of ultrashort-acting barbiturates; indeed, this class of drugs is essentially only used by nurses who have significant experience in intensive care units and as nurse anesthetists. Very few paramedics are trained or experienced in the use of ultrashort-acting barbiturates. Based on my medical training and experience, and based upon my research of lethal injection procedures and practices, inadequacies in these areas elevate the risk that the lethal injection procedure will cause the condemned to suffer excruciating pain during the execution process.

34. Procedure 770 also dictates that "the lip of the neoprene diaphragm on the "Y" injection site shall be rolled back so that it can easily be removed for insertion of syringe tips instead of a needle". Although Procedure 770 does not articulate what type of "Y" site equipment is being used so I am unable to specify if this procedure is likely to cause a disruption in the intravenous flow of drugs, I am unaware of any such medically-approved use of this equipment, and would not alter the site myself in such a fashion. Normal medical practice is to insert the needle or needle-less injection device through the diaphragm, thereby assuring a tight and adequate connection. This departure from standard practice is not explained, nor is it clear how this deviation was developed, or why.

35. The altering of established medical procedures without adequate medical review and research, by untrained personnel, causes great concern about the structure of the lethal injection protocol and its medical legitimacy. There is no indication of how Procedure 770 was developed, who was consulted, what procedures were considered and why. It may be something the Warden thinks about and develops alone, or in consultation with other corrections personnel, some of whom may or may not have any medical training, or any specialized knowledge of anesthetic literature and practice. Appropriate mechanisms for medical review, and standardization of the implementation and amendment process, are critical features in any medical protocol so that the medical

professionals and the public can be assured that proper and humane procedures are in place and being followed. Otherwise, the process is prone to ad hoc administration and error, if not gross negligence, or worse, an alteration of the process so as to inflict as much agony as possible. With lethal injection, such concerns are highly elevated.

36. This concern over medically deficient administration was demonstrated two of the five California executions for which records and other information are available. In the execution of William Bonin, it took the staff assigned anywhere between 18 and 27 minutes to fashion the IV lines (the records are unclear as to this point). This is an unusually long period of time for an experienced and properly trained professional. In the execution of Stephen Anderson on January 29, 2002, one of the persons who attempted to secure an IV was unable to do so without causing significant bleeding and the need to remove his gloves. Again, this indicates that the process is a difficult one and that it is necessary that the persons doing it are properly trained and experienced. As is widely recognized in the medical community, administration of intravenous medications and the management of intravenous systems are complex endeavors. I have also reviewed declaration of Warden Calderon who quite eloquently describe the stresses and challenges of how insertion of IV catheters can become a complex, challenging and stressful endeavor.

37. The procedures listed on the CDC website, unnecessarily, calls for a saline solution to be administered between the pancuronium bromide and the potassium chloride. I do not see a medical purpose for this to be included in the procedure, and question whether it is necessary to achieve the goal of a humane execution. Moreover, it can create a risk of critical errors including medication errors caused by syringe "mix-ups".

38. There are no procedures contained within Procedure 770 for the resuscitation of the inmate once the sodium pentothal is administered. This would foreclose the possibility of legal relief. It would also mean that if something in the process were to go wrong, and the process needed to be aborted or altered, it would be too late to be effective, and a coma may result. Any time up until the potassium chloride is administered, the prisoner could be readily resuscitated given the appropriately trained personnel and routine

resuscitation medication and equipment. If this were to occur after the potassium chloride was administered, a resuscitation would be more challenging but still possible. Resuscitation would therefore require equipment close-by, and properly credentialed personnel, neither of which are specified in Procedure 770.

The Lack of Adequate Procedures for Foreseeable Difficulties

39. The information available to me about California's lethal injection execution protocol contains no reference to plans for dealing with the foreseeable circumstance wherein peripheral intravenous access cannot be obtained in the arm or leg. Based on my medical training and experience, and based on my research into lethal injection procedures and practices, it is my opinion to a reasonable degree of medical certainty that any reliable, humane lethal injection procedure must account for the foreseeable circumstance of a condemned inmate having physical characteristics that prevent intravenous access from being obtained by a needle piercing the skin and entering a superficial vein suitable for the reliable delivery of drugs. There have been lethal injections in which this problem has arisen from a variety of circumstances. Some of these circumstances could be due to as obesity, steroidal use, history of intravenous drug use and medical procedures such as chemotherapy, suggesting a need for a lethal injection protocol to contain a medical response so that personnel are not left to guess at the proper procedures to be undertaken. This is a critical failing of Procedure 770, which in general inadequately prepares for difficulties in this highly involved process.

40. In this setting, state lethal injection protocols typically specify the use of a "cut-down" procedure to access a vein adequate for the reliable infusion of the lethal drugs. No equipment or supplies for performing a cut-down procedure are listed in the California lethal injection protocol, nor is there information regarding the training, experience, expertise, credentials, certification, or proficiency of the personnel who would perform such a "cut down" procedure. In this regard, California's lethal injection protocol is deficient in comparison to those of other states that I have reviewed. This complicated medical procedure requires equipment and skill that are not accounted for in Procedure 770.

It has a very high probability of not proceeding properly in the absence of adequately trained and experienced personnel, and without the necessary equipment. If done improperly, the "cut-down" process can result in very serious complications including severe hemorrhage (bleeding), pneumothorax (collapse of a lung which may cause suffocation), and severe pain. It is well documented that lethal injection procedures in other states have at times required the use of a central intravenous line. California has not, to my knowledge, released information about the need for central intravenous access during prior executions, and therefore it is not possible to make any assessment about whether the necessary safeguards have been set in place to ensure that the procedure is reasonably humane.

41. It is my further opinion that to assure a lethal injection without substantial risks of inflicting severe pain and suffering, there must be proper procedures that are clear and consistent: there must be qualified personnel to ensure that anesthesia has been achieved prior the administration of pancuronium bromide and potassium chloride, there must be qualified personnel to select chemicals and dosages, set up and load the syringes, administer "pre-injections," insert the IV catheter, and perform the other tasks required by such procedures; and there must be adequate inspection and testing of the equipment and apparatus by qualified personnel. The California Department of Correction's written procedures for implementing lethal injection, to the extent that they have been made available, provide for none of the above.

Conclusion

42. Based on my research into methods of lethal injection used by various states and the federal government, and based on my training and experience as a medical doctor specializing in anesthesiology, it is my opinion based on a reasonable degree of medical certainty that, given the apparent absence of a central role for a properly trained medical or veterinary professional in California's execution procedure, the chemicals used, the lack of adequately defined roles and procedures, and the failure to properly account for foreseeable risks, the lethal injection procedure California employs creates medically unacceptable risks of inflicting excruciating pain and suffering on inmates during the lethal

injection procedure.

43. In addition, in order to more fully and fairly assess the impact of Procedure 770's failings, it is necessary to obtain all the records and logs used, and all official witness statements from prior executions, as well as the full rules and regulations devised by CDC for lethal injection. This would include identifying the qualifications, experience and training of those persons who apply the IVs and who administer and monitor the injection.

I declare under penalty of perjury under the laws of the state of California and the United States of America that the foregoing is true and correct. Executed this 19th day of December, 2004 in New York City, New York.

Dated: December 19, 2004

Dr. Mark Heath

Curriculum Vitae

1) Date of preparation: December 19, 2004

2) Name: Mark J. S. Heath

Birth date: March 28, 1960
Birthplace: New York, NY
Citizenship: United States, United Kingdom

3) Academic Training:

Harvard University	B.A., Biology, 1983
University of North Carolina, Chapel Hill	M.D., 1987
Medical License	New York: 177101-1

4) Traineeship:

1987 – 1988 Internship, Internal Medicine, George Washington University Hospital, Washington, DC.

1988 – 1991 Residency, Anesthesiology, Columbia College of Physicians and Surgeons, New York, NY

1991 – 1993 Fellowship, Anesthesiology, Columbia College of Physicians and Surgeons, New York, NY

5) Board Qualification:

Diplomate, American Board of Anesthesiology, October 1991.
Testamur, Examination of Special Competence in Perioperative Transesophageal Echocardiography (PTEeXAM), 2001.

6) Military Service: None

7) Professional Organizations:

American Society of Anesthesiologists
International Anesthesia Research Society
Society of Cardiovascular Anesthesiology

8) Academic Appointments:

1993 – 2002	Assistant Professor of Anesthesiology, Columbia University, New York, NY
2002 - present	Assistant Professor of Clinical Anesthesiology, Columbia University, New York, NY

9) Hospital/Clinical Appointments:

1993 – present Assistant Attending Anesthesiologist, Presbyterian Hospital, New York, NY.

10) Honors:

Magna cum laude, Harvard University
Alpha Omega Alpha, University of North Carolina at Chapel Hill
First Prize, New York State Society of Anesthesiologists Resident Presentations, 1991

11) Fellowship and Grant Support:

Foundation for Anesthesia Education and Research, Research Starter Grant Award, Principal Investigator, funding 7/92 - 7/93, $15,000.

Foundation for Anesthesia Education and Research Young Investigator Award, Principal Investigator, funding 7/93 - 7/96, $70,000.

NIH KO8 "Inducible knockout of the NK1 receptor"
Principal Investigator, KO8 funding 12/98 - 11/02,
$431,947 over three years
(no-cost extension to continue through 11/30/2002)

NIH RO1 "Tachykinin regulation of anxiety and stress responses"
Principal Investigator, funding 9/1/2002 – 8/30/2007
$1,287,000 over 5 years

12) Departmental and University Committees:

Research Allocation Panel (1996 – 2001)
Institutional Review Board (Alternate Boards 1-2, full member Board 3) (2003 - present)

13) Teaching:

Lecturer and clinical teacher: Anesthesiology Residency Program, Columbia University and Presbyterian Hospital, New York, NY

Advanced Cardiac Life Support Training

Anesthetic considerations of LVAD implantation. Recurrent lecture at Columbia University LVAD implantation course.

Invited Lecturer:

NK1 receptor functions in pain and neural development, Cornell University December 1994

Anxiety, stress, and the NK1 receptor, University of Chicago, Department of Anesthesia and Critical Care, July 2000

Anesthetic Considerations of LVAD Implantation, University of Chicago, Department of Anesthesia and Critical Care, July 2000

NK1 receptor function in stress and anxiety, St. John's University Department of Medicinal Chemistry, March 2002

Making a brave mouse (and making a mouse brave), Mt.Sinai School of Medicine, May 2002

Problems with anesthesia during lethal injection procedures, Geneva, Switzerland. Duke University School of Law Conference, "International Law, Human Rights, and the Death Penalty: Towards an International Understanding of the Fundamental Principles of Just Punishment", July 2002.

NK1 receptor function in stress and anxiety, Visiting Professor, NYU School of Medicine, New York, New York. October 2002.

Anesthetic Depth, Paralysis, and other medical problems with lethal injecton protocols: evidence and concerns, Federal Capital Habeas Unit Annual Conference, Jacksonville, Florida. May 2004.

Medical Scrutinyof Lethal Injection Procedures. National Association for the Advancement of Colored People Capital Defender Conference, Airlie Conference Center, Warrenton, Virginia. July 2004.

Anesthetic considerations of LVAD implantation. Recurrent lecture at Columbia University LVAD implantation course.

14) Grant Review Committees: None

15) Publications:

Original peer reviewed articles

* Santarelli, L., Gobbi, G., Debs, P.C., Sibille, E. L., Blier, P., Hen, R., **Heath, M.J.S.** (2001). Genetic and pharmacological disruption of neurokinin 1 receptor function decreases anxiety-related behaviors and increases serotonergic function. **Proc. Nat. Acad. Sci.**, 98(4), 1912 – 1917.

* King, T.E. [δ], **Heath M. J. S[δ].**, Debs, P, Davis, MB, Hen, R, Barr, G. (2000). The development of nociceptive responses in neurokinin-1 receptor knockout mice. Neuroreport.;11(3), 587-91 δ authors contributed equally to this work

* **Heath, M. J. S.**, Lints, T., Lee, C. J., Dodd, J. (1995). Functional expression of the tachykinin NK_1 receptor by floor plate cells in the embryonic rat spinal cord and brainstem. **Journal of Physiology** 486.1, 139 -148.

* **Heath, M. J. S.**, Womack M. D., MacDermott, A. B. (1994). Subsance P elevates intracellular calcium in both neurons and glial cells from the dorsal horn of the spinal cord. **Journal of Neurophysiology** 72(3), 1192 - 1197.

McGehee, D. S., **Heath, M. J. S.**, Gelber, S., DeVay, P., Role, L.W. (1995) Nicotine enhancement of fast excitatory synaptic transmission in the CNS by presynaptic receptors. **Science** 269, 1692 - 1696.

Morales D, Madigan J, Cullinane S, Chen J, **Heath, M. J. S.**, Oz M, Oliver JA, Landry DW. (1999). Reversal by vasopressin of intractable hypotension in the late phase of hemorrhagic shock. Circulation. Jul 20;100(3):226-9.

LoTurco, J. J., Owens, D. F., **Heath, M. J. S.**, Davis, M. B. E., Krigstein, A. R. (1995). GABA and glutamate depolarize cortical progenitor cells and inhibit DNA synthesis. **Neuron** 15, 1287 - 1298.

Kyrozis A., Goldstein P. A., **Heath, M. J. S.**, MacDermott, A. B. (1995). Calcium entry through a subpopulation of AMPA receptors desensitized neighboring NMDA receptors in rat dorsal horn neurons. **Journal of Physiology** 485.2, 373 - 381.

McGehee, D.S., Aldersberg, M. , Liu, K.-P., Hsuing, S., **Heath, M.J.S.** , Tamir, H. (1997). Mechanism of extracellular Ca^{2+}-receptor stimulated hormone release from sheep thyroid parafolicular cells. **Journal of Physiology**: 502,1, 31 - 44.

Kao, J., Houck, K., Fan, Y., Haehnel, I., Ligutti, S. K., Kayton, M. L., Grikscheit, T., Chabot, J., Nowygrod, R., Greenberg, S., Kuang, W.J., Leung, D. W., Hayward, J. R., Kisiel, W., **Heath, M. J. S.**, Brett, J., Stern, D. (1994). Characterization of a novel tumor-derived cytokine. **Journal of Biological Chemistry** 269, 25106 - 25119.

Dodd, J., Jahr, C.E., Hamilton, P.N., **Heath, M.J.S.**, Matthew, W.D., Jessell, T.M. (1983). Cytochemical and physiological properties of sensory and dorsal horn neurons that transmit cutaneous sensation. **Cold Spring Harbor Symposia of Quantitative Biology** 48, 685 -695.

Pinsky, D.J., Naka, Y., Liao, H., Oz, M. O., Wagner, D. D., Mayadas, T. N., Johnson, R. C., Hynes, R. O., **Heath, M.J.S.**, Lawson, C.A., Stern, D.M. Hypoxia-induced exocytosis of endothelial cell Weibel-Palade bodies. **Journal of Clinical Investigation** 97(2), 493 - 500.

Case reports none

Review, chapters, editorials

* **Heath, M. J. S.**, Dickstein, M. L. (2000). Perioperative management of the left ventricular assist device recipient. Prog Cardiovasc Dis.;43(1):47-54.

* Dickstein, M.L., Mets B, **Heath M.J.S.** (2000). Anesthetic considerations during left ventricular assist device implantation. Cardiac Assist Devices pp 63 – 74.

* **Heath, M. J. S.** and Hen, R. (1995). Genetic insights into serotonin function. **Current Biology** 5.9, 997 -999.

* **Heath, M.J.S.**, Mathews D. (1990). Care of the Organ Donor. **Anesthesiology Report** 3, 344-348.

* **Heath, M. J. S.**, Basic physiology and pharmacology of the central synapse. (1998) **Anesthesiology Clinics of North America** 15(3), 473 - 485.

Abstracts

Heath, M.J.S., Davis, M., Santarelli L., Hen H. (2002). Gene targeting of the NK1 receptor blocks stress-evoked induction of c-Fos in the murine locus coeruleus. IARS American-Japan Congress A-15.

Heath, M.J.S., Davis, M., Santarelli L., Hen H. (2002). Gene targeting of the NK1 receptor blocks stress-evoked induction of c-Fos in the murine locus coeruleus. Anesthesiology 95:A-811.

Heath, M.J.S., Davis, M., Santarelli L., Hen H. (2002). Expression of Substance P and NK1 Receptor in the Murine Locus Coeruleus and Dorsal Raphe Nucleus. Anesthesia and Analgesia 93; S-212

Heath, M.J.S., Davis, M., Santarelli L., Hen H. (2002). Expression of Substance P and NK1 Receptor in the Murine Locus Coeruleus and Dorsal Raphe Nucleus. Anesthesia and Analgesia 93; S-212.

Heath, M.J.S., Santarelli L, Hen H. (2001) The NK1 receptor is necessary for the stress-evoked expression of c-Fos in the paraventricular nucleus of the hypothalamus. Anesthesia and Analgesia 92; S233.

Heath, M.J.S., Santarelli L, Debs P, Hen H. (2000). Reduced anxiety and stress responses in mice lacking the NK1 receptor. Anesthesiology 93: 3A A-755.

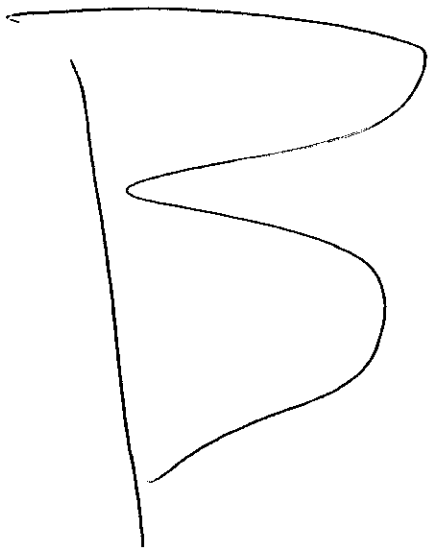
Heath, M.J.S., King, T., Debs, P.C., Davis M., Hen R., Barr G. (2000). NK1 receptor gene disruption alters the development of nociception. Anesthesia and Analgesia; 90; S315.

Heath, M.J.S., Lee, J.H., Debs, P.C., Davis, M. (1997). Delineation of spinal cord glial subpopulations expressing the NK1 receptor. Anesthesiology; 87; 3A; A639.

Heath, M.J.S., MacDermott A.B. (1992). Substance P elevates intracellular calcium in dorsal horn cells with neuronal and glial properties. Society for Neuroscience Abstracts; 18; 123.1.

Heath, M.J.S., Lee C.J., Dodd J. (1994). Ontogeny of NK1 receptor-like immunoreactivity in the rat spinal cord. Society for Neuroscience Abstracts; 20; 115.16.

Heath, M.J.S., Berman M.F. (1991) Isoflurane modulation of calcium channel currents in spinal cord dorsal horn neurons. Anesthesiology 75; 3A; A1037.



CALIFORNIA STATE PRISON
SAN QUENTIN

Issue Date: 10/01/92

Revised Date: 6/13/03

I. LETHAL INJECTION CHAMBER, SAN QUENTIN STATE PRISON (REDACTED)

San Quentin Operational Procedure No. 770

II. PURPOSES AND OBJECTIVES

The purpose of this plan is to establish the procedure for the care and treatment of inmates from the time an execution date is set through execution by lethal injection. In addition, this plan identifies staff responsibilities pursuant to preparation for executions and operation of the Lethal Injection Chamber.

III. REFERENCES

California Penal Code Sections: 1193, 1217, 1227, 3600, 3601, 3603, 3604, 3605, 3700, 3700.5, 3701, 3702, 3703, 3704, 3704.5, 3705, 3706.

California Administrative Manual, Article 2, Legal Executions, Sections 6200(a) through (f). (See Resource Supplements REF. 1-4.)

IV. APPROVAL AND REVIEW

This plan will be reviewed and/or revised by the Chief Deputy Warden annually in the month of October and forwarded to the Warden for approval prior to submitting the manual to the Director of Corrections.

This Institution Procedure is confidential and may be reviewed by staff with the need to know at the Warden's office only.

V. RESPONSIBILITY —

A. The Warden is responsible for the overall operation of this procedure.

B. The Chief Deputy Warden is responsible for the security of the institution in the event of a scheduled execution.

C. The Lieutenant in Charge of the execution chamber is responsible for monitoring and ensuring that this procedure is followed.

D. The Associate Warden, Unit III will be familiar with all aspects of this plan.

VI. METHODS

The first execution date for an individual is set under the provisions of Penal Code Sections 1193. The execution date must be scheduled no sooner than 60 days, but no later than 90 days from the 1193 PC hearing.

All subsequent execution dates are set under the provision of Penal Code Sections 1227. Execution dates set under this provision of the penal code sections must be scheduled no sooner than 30 days, but no later than 60 days from the 1227 PC hearing.

A. Chronology of Events Prior to Execution:

1. Upon receipt of the execution order:

a. The Warden will:

1) Notify the Director of Corrections via the Deputy Director - Institutions Division by telephone, if the execution appears imminent, followed with a copy of the execution order to the Director of Corrections, via the Deputy Director of Institutions.

2) Together with the Legal Affairs Coordinator and Associate Warden, Unit III interview the inmate to be executed, serve the execution order, and document the interview on the Service of Execution Warrant Form.

3) Notify the Governor's Legal Affairs Secretary by mail of the scheduled execution with a copy of the execution order enclosed. Notify the Director of Corrections via the Deputy Director - Institutions Division of the scheduled execution.

4) Submit to the Director via the Deputy Director - Institutions Division, the names of three (3) psychiatrists who will serve as the required panel of alienists. The alienists will be employees of the Department of Corrections who have previously received the approval of the Director.

5) Secure from the Case Records Manager the central file of the inmate, which will be maintained in the Warden's office seven days prior to the date of execution.

b. The Chief Deputy Warden will:

1) Prepare to activate execution security plan.

c. The Associate Warden, Unit III will:

1) Move inmate to designated area. Inmates housed in East Block will be moved to the first tier upon receipt

of the warrant. Inmates in North Segregation will remain in their assigned cells. Inmates in the Adjustment Center will remain in their assigned cells. Five days prior to an execution, inmates will move to a designated cell in North Segregation. Inmates in the Adjustment Center may be moved to North Segregation or remain in the Adjustment Center at the discretion of the Warden.

2) Implement hourly checks and logs by Condemned Unit staff.

3) Direct the Condemned Unit staff to commence documentation of the inmate's behavior on CDC 128B on each shift. These 128B's will be forwarded daily to the Legal Affairs Coordinator via the Associate Warden, Unit III. Any documentation regarding unusual behavior will be brought to the attention of the Warden.

4) Initiate daily contact with unit on procedural follow through.

d. The Legal Affairs Coordinator will:

1) Act as liaison between the inmate's family and the Warden, answering questions the family may have, and coordinating visits and other communication between the inmate and his or her family. In addition, if necessary, the Legal Affairs Coordinator will make telephone contact with the inmate's family or attorney prior to the mailing of any necessary notifications regarding the execution, informing the family that the correspondence will be forthcoming and explaining its purpose and necessity. The Legal Affairs Coordinator will attend all meetings of the execution team.

2) Direct the Administrative Assistant to direct the mailroom Sergeant to deliver all non-legal incoming mail for the inmate to the Administrative Assistant to be inspected, logged and forwarded to the inmate via the oncoming Third Watch Condemned Row Sergeant. Mail that is sent to the inmate by anonymous senders, containing offensive messages, will be hand carried to the inmate by the Condemned Row Correctional Counselor II. The Correctional Counselor II will give the inmate the option to accept or reject the offensive correspondence. The Administrative Assistant will instruct the First Watch Condemned Row Sergeant to inspect and log all non-legal outgoing mail from the inmate. The Condemned Row Sergeant will forward any unusual mail immediately to the Administrative Assistant for

the Warden's attention. This process must be handled expeditiously to avoid unnecessary delay of outgoing or incoming mail in this category.

3) Receive from the Visiting Lieutenant a copy of the list of approved visitors. A print-out of visits will be provided and filed in the pre-execution record.

4) Instruct the Office Assistant who schedules legal visiting to give priority accommodations to the attorney for the inmate. If a scheduling problem occurs, the Legal Affairs Coordinator will immediately be notified.

5) Construct a file on the inmate that shall contain all pertinent court documents; i.e., execution order, etc., a biographical information sheet from the Public Information Officer's condemned data, photocopy of the visiting card(s), Service of Execution Warrant form, pre-execution activity log, behavior 128B's, and any other pertinent information. This file shall be kept at hand in the Legal Affairs Coordinator's office. In the event the execution is stayed, the file will be closed and filed in the Legal Affairs Coordinator's office.

6) Update the list of scheduled executions and distribute it to the Administrative Officer of the Day (AOD) book, Chief Deputy Warden, Associate Warden, Unit III, Visiting Lieutenant, Mailroom Sergeant, Chief Psychiatrist and Chaplains.

e. The Public Information Officer will:

1) Advise the Assistant Director of Communications, by telephone, of the execution date. Coordinate with the Assistant Director of Communications a press release for release to inquiries of news media agencies.

f. The Visiting Lieutenant will:

1) Flag the computer file in the memo field with the following instruction:

(a) Priority Visiting Privileges. Do not turn away visitors without approval of Warden or Administrative Officer of the Day (AOD). Notify Warden's office (Public Information Officer) seven days prior to imminent execution of each visit that this inmate has on the day that it occurs, or if on weekend or holiday, the next workday.

The Visiting Lieutenant will ensure that these instructions are complied with.

2) Make photocopies of the inmate's visiting file along with a computer print-out of all approved visitors and deliver them to the Legal Affairs Coordinator so that visits can be filed in the pre-execution file.

3) Ensure that the attorney for the inmate is afforded every assistance in expeditiously having access to his or her client. In the final weeks prior to the execution, this may include facilitating attorney visits during weekends and holidays should such be necessary.

4) Upon receipt of a warrant of execution for an inmate, and when it appears the execution is imminent, the Visiting Lieutenant will be notified that all visiting for a Grade A inmate will take place in the plexiglass booths of the Main Visiting Room during normal visiting hours. A correctional officer will be assigned to provide constant and direct supervision of the visit.

   Grade B inmates will continue to receive non-contact visits in Main Visiting.

5) Beginning at least five (5) days prior to the scheduled execution, the following visiting procedure will be adhered to:

   (a) Non-legal visitors will be limited to family members only. If the inmate does not have family members visiting him or her, non-legal visits will be limited to individuals who have an established history of visiting the inmate.

   (b) Grade B inmates will continue to receive non-contact visits during designated visiting hours.

   (c) A state vehicle will be supplied to transport visitors from the East Gate to the Visiting Room.

   (d) The inmate will visit in waist restraints and handcuffs.

   (e) The inmate and the visitor(s) may briefly embrace or shake hands at the beginning and end of the visit. No other physical contact will be allowed.

6) In the event there is a scheduled attorney visit, the following procedures will apply:

(a) Attorneys and approved visitors of the inmate will not be permitted to visit with the inmate simultaneously.

(b) For an attorney/client confidential visit, the attorney will be allowed to bring the following items:

(1) One pen or pencil;
(2) One note pad;
(3) Necessary legal materials.

(c) For attorney/client confidential visits, the inmate will be removed from the conference room and proceed with his attorney visit in the plexiglass visiting area under constant visual observation by the special visiting team.

7) All visiting for the inmate will cease once he/she is placed in the overnight cell in the chamber area. Attorneys may have access to their client by phone as requested.

g. The Lieutenant in Charge of the Chamber will:

1) Ensure that the execution chamber is ready.

2) Ensure no individuals enter the chamber area without specific approval of Warden.

h. The Condemned Row Correctional Counselor II will:

1) Maintain close daily contact with the inmate upon service of the execution warrant.

2) Interview and assess the inmate's behavior and attitude upon conclusion of visits and prior to returning to his cell.

2. 45 - 20 days prior to the execution:

a. The Warden will:

1) Approach those reputable citizens known to him/her that would be willing to serve as official witnesses to the execution. The Warden shall confirm the availability and willingness to participate of twelve (12) official witnesses and two (2) or more alternates.

2) Compile and submit to the Director of Corrections via the Deputy Director, Institutions the original

documents of the 20-day pre-execution report of the alienists pursuant to Penal Code 3700.5. The Director of Corrections shall forward the document to the Governor's Legal Affairs Secretary via the agency secretary, Youth and Adult Correctional Agency. The 20-day report shall be comprised of the following:

(a) A current psychiatric report.

(b) Comments of the chaplain attending the inmate.

(c) A summary of the inmate's conduct and behavior.

(d) A cover letter from the Warden addressing the above and any first-hand information obtained from observations, interviews, or communication with family and friends of the inmate.

The 20-day report is to be delivered to the Deputy Director, Institutions Division 28 days prior to the scheduled execution.

b. The Psychiatrists (Alienists) will:

1) Interview and examine the inmate within sufficient time so as to evaluate the findings and give written report to the Warden within the Warden's 20-day report deadline. The written reports shall include an interpretation of the examinations, interviews, and history stated in lay wording. Information available to one psychiatrist pertinent to the inmate's sanity shall be made available to the other two psychiatrists for evaluation and inclusion in the appropriate psychiatric reports.

2) The Alienist panel will make an appointment with the Warden prior to submission of the 20-day report. The Alienist panel will review with the Warden the inmate's psychiatric report. This meeting will include all psychiatric staff who may have observations and information regarding the inmate. This information will be shared with the Warden.

3) For imminent executions, the Warden will select a member of the Alienist panel who, along with the Chief Medical Officer, will ensure the following is complied with:

(a) Any medication ordered for the inmate will have prior approval of the Chief Medical Officer or the selected Alienist panel member.

(b) The selected Alienist panel member and the Chief Medical Officer will develop a 24-hour call schedule in which one of them will be available either by telephone or pager to approve or deny a recommended medication prescription for the inmate.

4) An Alienist selected by the Warden will review the unit hourly check logs completed on the inmate on a daily basis notifying the Warden of any unusual behavior. The same procedure will be followed for the 15 minute check logs normally begun five (5) days prior to the scheduled execution.

c. The Chaplain will:

1) Interview the inmate as needed to assess his spiritual and emotional well-being. The chaplain attending the inmate's religious needs will determine the inmate's religious preferences and needs, next of kin, funeral or other requests, attitudes or thoughts on death and dying, and any observations as to his emotional stability such as acceptance of his sentence, etc. The chaplain will formulate his observations into a written report and submit it to the Warden within sufficient time to meet the Warden's 20-day report deadline.

d. The Condemned Row Correctional Counselor II will:

1) Assess the observations of the inmate's counselor and custody staff, and research the case history to determine the inmate's past and present conduct and behavior. This information will be submitted in writing to the Warden within sufficient time to meet the Warden's 20-day report deadline.

e. The Public Information Officer will:

1) Coordinate with the Assistant Director, Communications to announce to the media via recognized wire services that the execution is scheduled and any media representatives wishing to witness or otherwise cover the event must follow the instructions as outlined in the advisory. The Public Information Officer and Assistant Director, Communications will announce a 10-day filing period in which the news media may submit their written requests to witness the execution. Requests

must be for the execution at hand, and will not be kept on file. No request will be considered that is received after close of business of the tenth and final day.

2) Work with the Assistant Director, Communications to select up to seventeen (17) media witnesses to the execution. Consideration will be given to the broadest cross-section of media format and greatest circulation/viewers.

3. 30 - 7 Days Prior to an Execution:

a. Sanity Review Request:

Attorneys may submit in writing for the Warden's review, any current psychiatric information that they believe may have a bearing on evaluating the sanity of a condemned inmate with a scheduled execution date.

This information will be accepted 30 days prior to a scheduled execution, and up to 7 days prior to the scheduled execution. Information submitted sooner than 30 days preceding the scheduled execution will not be considered by the Warden under this procedure, but will be accepted for consideration by the panel of alienists. The panel of alienists will consider this information in preparation of the 20-day pre-execution sanity report.

The Warden will have available for review all psychiatric information pertaining to the condemned inmate known to San Quentin's psychiatric staff. This information will be reviewed along with all material submitted by the inmate's attorney. Upon reviewing the information, the Warden will determine if there exists a substantial showing of insanity.

The Warden will notify the condemned inmate's attorney in writing of the results of the requested sanity review. Should the Warden, with the assistance of the independent Department of Corrections Psychiatrist, find a substantial showing of insanity, the Warden will notify the District Attorney of Marin County in accordance with Penal Code Section 3701.

The Warden will accept requests for the Warden's review of psychiatric information regarding the inmate's sanity up to 7 days prior to the scheduled execution. The procedures that are put in place by San Quentin the week prior to the execution provide the Warden with current information regarding the inmate's behavior and psychiatric condition. These procedures include more intensified psychiatric staff contact with the inmate. In addition, the inmate's behavior is continuously monitored by unit staff for the final 5 days with documentation completed every 15 minutes. Should the

inmate display unusual or inappropriate behavior, the Warden will be notified immediately by institutional staff. The Warden will take necessary steps to evaluate any reported changes including utilizing the provisions of Penal Code Section 3701, if deemed appropriate. All referrals to the Marin County District Attorney's office, under the provisions of Penal Code Section 3701, will be reported to the Director of Corrections in writing via the Deputy Director of Institutions.

The Director will notify the Governor's Legal Affairs Secretary in writing of all referrals to the Marin County District Attorney's office under the provisions of Penal Code Section 3701.

4. 10 - 7 Days Prior to an Execution:

a. The Warden will:

1) Compile and send a final 7-day report (original documents) to the Director via the Deputy Director, Institutions which will in essence indicate whether or not there has been any change in the inmate's mental condition since the last 20-day report. For execution dates that do not appear to be imminent, the 7-day report will be delivered to the Deputy Director, Institutions Division, 14 days prior to the scheduled execution. For imminent executions, the 7-day report will be delivered 7 days prior to the execution. The Director of Corrections shall forward the 7-day report to the Governor's Legal Affairs Secretary via the Agency Secretary, Youth and Adult Correctional Agency. This report shall be a memorandum updating the formal 20-day report based upon current observations. Intermediate reports may be submitted by the Warden any time there is a change which may have an effect under Section 3700.5 of the Penal Code.

2) Review the inmate's selection of witnesses and spiritual advisor(s) as provided by the Associate Warden, Unit III, and notify the inmate in writing of his/her decision to approve or deny any or all witnesses. The requested witnesses/spiritual advisor(s) must meet normal visiting criteria.

b. The Associate Warden, Unit III will:

1) Ascertain if the condemned inmate wishes to invite up to five (5) witnesses and two (2) spiritual advisors. If so, provide the Warden with the names and addresses.

c. The Psychiatrists (Alienists) will:

1) Interview and evaluate the inmate in much the same manner as they did for the 20-day report, and submit their findings to the Warden in writing. They shall compare their current evaluations with their previous findings to determine any change in the inmate's mental condition. Their observations must be current (within 10 days preceding preparation of the report) and pertain to the inmate's mental state.

d. The Chaplain will:

1) Report the emotional state of the inmate, being especially sensitive to any change. The chaplain's observations will be submitted in writing to the Warden. These observations shall pertain to contacts made within 3 days preceding preparation of the report.

e. The Condemned Row Correctional Counselor II will:

1) Report any change in conduct or behavior in writing to the Warden.

f. The Legal Affairs Coordinator will:

1) Contact the next of kin or attorney by telephone to advise them that we will be asking their wishes concerning disposition of the inmate's remains.

2) If necessary, prepare a letter for the Warden's signature to next of kin requesting their intentions regarding the inmate's remains. Ascertain if they will claim the body. If so, advise the name and location of the contracting mortuary. If they do not intend to claim the body, the Legal Affairs Coordinator will have them so state and will notify the contracting mortuary.

g. The Public Information Officer will:

1) Send out written notice to all media representatives selected to be witnesses. Only those reporters, etc. in possession of an authentic original letter signed by the Warden and corresponding photo identification will be admitted to witness the execution.

2) Send out written notice to all media representatives selected to cover the execution event. Selection will be made of 125 total persons from legitimate media outlets. Only those bearing authentic original letters signed by the Warden will be admitted to the institution and the media center.

h. The Lieutenant in Charge of the Chamber will:

1) Report in writing to the Warden that the following procedures have been accomplished:

(a) Staff assignments on the execution detail are ready.

(b) Preliminary chamber area readiness and operational checks have been made. (Needed maintenance work is requested immediately.)

(c) Ensure that chamber area has necessary supplies which will consist of both household and personal needs.

(d) Ensure that the required clothing will be available.

(e) Ensure that the necessary chemicals are not only available, but also properly controlled.

5. 5 Days Prior to Execution:

a. The Associate Warden, Unit III will initiate the following procedure if execution is imminent:

1) Direct that the inmate be moved to the designated security housing area of Condemned Row where he will be under 24-hour a day observation of an officer assigned for that purpose. The officer will check the welfare of the inmate at fifteen (15) minute intervals and log each check.

The Warden may order the inmate to be moved to the designated security housing area of Condemned Row where he will be under 24 hour a day observation of an officer assigned for that purpose at any time following receipt of the death warrant when, in the opinion of the Warden, it is necessary to maintain the safety and security of the public, the institution and/or the inmate.

2) Direct that all non-legal property belonging to the inmate be removed from his cell and placed under the security of the officer stationed outside the security cell. The inmate will be given the use of items by the officer as he needs them, and then return them to the officer's care.

3) In the event of a stay at this juncture, the Associate Warden, Unit III will initiate return of the inmate to his former housing status.

b. The Condemned Row Correctional Counselor II will initiate the following procedure if execution is imminent:

1) Interview the inmate to ascertain what request if any he may have for a last meal. The Correctional Counselor II will make the meal request known to the Food Manager and determine if Food Service will be able to fulfill the request. This answer will be reported back to the inmate, and either way, preparations made through the Food Manager for a last meal.

2) Interview the inmate to discern any special requests as to the disposition of his property. The inmate will package and label any property to be sent out of the institution. The Correctional Counselor II will maintain an inventory signed receipt of all the packaged property for mailing the first weekday following the execution. In the event of an indefinite stay, the property shall be returned by a signed (inmate) receipt by the Correctional Counselor II.

3) Arrange for the monitoring of all telephone calls made by the inmate via an institutional telephone. Legal calls will not be monitored but will be facilitated by staff. All calls will be logged on the pre-execution activity log. The Correctional Counselor II will ensure that the inmate has 24-hour access to a telephone for attorney contact.

4) Obtain clothing sizes from the inmate and ensure that appropriate clothing is available.

5) Brief the Warden, Chief Deputy Warden, Associate Warden Unit III, and Facility Captain daily as to the inmate's needs, requests, and behavior.

c. The Chief Deputy Warden will initiate the following procedure if execution is imminent:

1) The Chief Deputy Warden will implement the Execution Security Plan.

d. The Warden will initiate the following procedure if execution is imminent:

1) Issue a Warden's bulletin to all staff residents advising them of likelihood of a gathering or demonstration at the East Gate.

e. The Visiting Lieutenant will initiate the following procedure if execution is imminent:

1) Announce to visitors and inmates via posted notice, San Quentin T.V. and any other resource available that visiting will be closed the day preceding the execution as well as the day of the execution.

2) Ensure that the family visiting quarters will be vacant from day 5 through the day of the execution. Prospective visitors, inmates, and housing unit staff will be so informed.

3) Ensure visiting for the condemned inmate is conducted as outlined in the procedure.

f. Spiritual Advisors will be allowed access to the inmate as follows:

1) State employed spiritual advisors selected by the inmate will be allowed to perform their spiritual functions at the cell front of the inmate's cell either on Second or Third Watch. The state employed spiritual advisor may visit the inmate in the holding cell of the execution chamber if requested by the condemned inmate.

2) Non-state employed spiritual advisors may visit the inmate utilizing the procedure as outlined in this procedure. Grade B inmates will be on a non-contact basis. Non-state employed spiritual advisors will not be allowed to visit the inmate in the housing unit.

6. 4 Days Prior to an Execution:

a. The Warden will initiate the following procedures if execution is imminent:

1) Issue a letter to San Quentin Village residents, Marin Rod and Gun Club and the Post Office advising them of any likelihood of a gathering or demonstration at the East Gate.

2) Direct that notices be passed during staff briefings and via the Count Gate television monitor, to inform staff of the East Gate closure on the evening prior to the day of the execution

b. The Business Manager II will:

1) Notify all contractors and vendors that we will not be accepting any services or goods from 1800 hours, 2 days prior to the execution through the execution day.

7. 3 Days Prior to an Execution:

a. The Lieutenant in Charge of the Chamber will initiate the following procedure if execution is imminent:

1) Be responsible for the security of the area. A search of all materials that will come into contact with the condemned inmate will be made. All equipment will be in working order and functioning. All chemicals will be under appropriate control to prevent tampering.

The following procedures will be followed without exception:

(a) The execution chamber area shall be closed to any and all persons not cleared by the Warden. The Lieutenant in Charge of the chamber has authorized access.

(b) The execution chamber area keys will not be issued to any person other than the Lieutenant in Charge of the Chamber or designee.

(c) All necessary traffic into the chamber areas will be cleared and directly supervised by the Lieutenant in Charge of the Chamber.

(d) The chamber area, holding area, and visiting area are cleaned and sanitized daily until the execution is carried out.

8. Two Days Prior to an Execution:

a. The Lieutenant in Charge of the Chamber will assume the following responsibilities:

1) Conduct an equipment check of all materials necessary to perform the execution.

2) Check the expiration and/or sterilization dates of all applicable items.

(a) Outdated items (e.g. Normal Saline bags) shall be replaced immediately.

(b) Sterilized packs bearing a sterilization date in excess of thirty (30) days shall be replaced or re-sterilized immediately.

9. Day Prior to an Execution:

a. The Chief Deputy Warden will:

1) Place institution on lockdown at the appropriate time commensurate with the day and hour of the scheduled execution.

b. The Warden and Associate Warden, Unit III will:

1) Direct that at the appropriate time commensurate with the day and hour of the scheduled execution, the inmate be rehoused in the death watch cell adjacent to the execution chamber area.

2) In the event the inmate has requested a spiritual advisor not employed by the Department of Corrections, the following procedure will be followed:

(a) The spiritual advisor will be permitted to visit with the inmate in the visiting room until 1800 hours if the execution is scheduled for shortly after midnight. Confidential visits in the plexiglass booths are not permitted.

(b) After visiting concludes, he/she will be given a completed unclothed body search in the appropriate restroom of the main visiting room.

(c) The spiritual advisor will be escorted through the rear search area door past Four Post, where he/she will be afforded the opportunity to use the staff restroom.

(d) The spiritual advisor will be permitted to bring the following items into the death watch area:

(1) Personal prayer book / Bible
(2) Communion pyx
(3) Sacramental wafers
(4) Other approved religious items

All items will be searched.

(e) If the spiritual advisor requests the use of the restroom, he/she will be escorted to Four Post. Another unclothed body search will be conducted before he/she is escorted back into the death watch cell.

(f) The spiritual advisor will be permitted drinking water upon request.

(g) The spiritual advisor will have no telephone access while in the death watch area.

(h) At 2315 hours, or 45 minutes prior to the scheduled time of execution, the spiritual advisor will be escorted from the death watch cell area, through the front count gate.

(i) If the spiritual advisor has also been designated as an inmate invited witness, he/she will escorted to a van until clearance to enter the witness area has been given. If he/she is not going to witness, the van will proceed to the West Gate where he/she will be processed out of the institution.

3) The Warden will be notified prior to any otherwise authorized visitor entering the death watch area.

c. The Lieutenant in Charge of the Chamber will:

1) Obtain the lethal injection:

2) Establish a death watch on a round-the-clock basis consisting of one (1) Correctional Sergeant and two (2) Correctional Officers.

3) The Execution Team will arrive for pre-execution instructions. The Lieutenant in Charge will arrange for accommodations as necessary.

d. The Captain, Central Services will:

1) At the appropriate time commensurate with the day and hour of the scheduled execution, establish a support team to assist as needed to maintain the smooth operation of the institution

2) At the appropriate time commensurate with the day and hour of the scheduled execution, establish a second support team. This staffing will continue as needed the day of the execution. The support teams shall be in addition to response teams.

3) Ensure East Block visiting area, main visiting area, and employees' lounge are cleaned and sanitized.

4) At the appropriate time commensurate with the day and hour of the scheduled execution, inspect all areas.

e. The Public Information Officer will:

1) Activate the media center at the appropriate time commensurate with the day and hour of the scheduled execution in the In-Service Training hall. The Public Information Officer will activate the bank

of pay telephones, and otherwise address the needs of media representatives that may be operating out of the center. The assigned staff will release no information or offer any commentary unless specifically authorized by the Public Information Officer. The Public Information Officer will give regular updates to any media gathered, and notify the Assistant Director, Communications of this action.

2) Work with the Assistant Director, Communications to prepare a biographical and general information sheet on the inmate for briefing notes for the media, including California Department of Corrections I.D. photo. A copy of this biographical and general information sheet will be sent to the Assistant Director of Communications.

3) At the time designated by the Warden, identify the media witnesses and escort them to their waiting area room at In-Service-Training (IST). The Public Information Officer will instruct the media witnesses there will be no cameras, recorders, sketch pads, etc. These items will be deposited at the media center for later retrieval. No such equipment will be allowed in the witness gallery. Pencils and notepads will be provided. The Public Information Officer may utilize the metal detector at the Inspectoscope Gate, or any other search method deemed necessary and reasonable.

4) The Warden through the Public Information Officer will designate a cut off time for the media to arrive as outlined in the Execution Security Plan.

f. The Official Witnesses will:

2) Meet in the designated area at the designated time for greeting by Warden.

10. Day of an Execution:

a. The Warden will:

1) Assure all witnesses are appropriately accommodated.

2) Usher the official witnesses to their assembly area and give final instructions as needed.

3) Approximately one-half hour before the execution, take his/her position at the execution chamber.

4) Direct that the witnesses be escorted into the witness area and take their designated places.

5) At the designated time of the execution, after all witnesses are in their designated places, issue the first of the required four commands:

(a) Ready the inmate.

(b) Bring the inmate out.

(c) Strap the inmate into the injection chair.

(d) Place the catheters in each arm and start the saline solution.

6) Once the saline solution is flowing, direct a member of the execution team stationed on the witness area side of the locked door leading to the execution anteroom to read a prepared a prepared statement detailing the court order mandating the execution.

7) Order the administration of the lethal injection until inmate is pronounced dead.

8) Upon verification by one of the attending physicians, a member of the execution team will read a prepared statement announcing the death of the inmate.

9) Immediately following the execution, thank witnesses. Arrange for their safe departure from the institution with the Investigations Unit Captain.

10) Approximately 1 hour after the execution, the Warden will issue a statement to the media.

b. The Associate Warden, Unit III will:

1) Approximately 2 hours prior to execution, meet with Warden.

c. A State Physician will:

1) Attend with another staff physician, and by monitoring the heart of the inmate, or by whatever means appropriate, determine and pronounce death.

d. The Public Information Officer will:

1) After receiving the order from the Warden, escort the media witnesses into the witness gallery.

2) Immediately upon Declaration of Death, take note of the exact time and usher the media witnesses directly

to the media center where they will give pool commentary and recount to the other assembled media. The Public Information Officer will give no commentary until after the official statement by the Warden.

3) Accompany the Warden to the post execution press conference. Field questions that follow the Warden's statement.

4) As soon as possible after the issuance of the official statement, usher all media out of the prison grounds.

e. The Administrative Assistant to the Warden will:

1) Assist the Public Information Officer in escorting news media into media center.

2) Escort the official and other witnesses into the witness gallery.

3) Assign a Correctional Officer to escort witnesses invited by inmate and/or the inmate's legal team from the West Gate to the designated areas. The correctional officer will remain with these witnesses and assist in escorting to the witness gallery. It is customary that not all members of the legal team actually witness the execution, but are on grounds until the execution has been carried out.

B. WITNESSES TO AN EXECUTION

1. Types of Witnesses:

a. Official Witnesses:
Official witnesses as defined in Section 3605 of the California Penal Code, will not have their names made public. Official Witnesses will be escorted into the viewing room first, and take seats at the rail.

b. Witnesses and Other Observers (staff, etc.)
Witnesses and observers will not have their names made public. Witnesses will be escorted into the viewing room second, taking their places upon the east risers.

c. News Media Witnesses
News media witnesses will be admitted according to Section D - NEWS MEDIA. News media witnesses will not have their names made public, unless they choose to do so. Media witnesses will be escorted into the viewing room third, taking their places upon the north risers.

d. Inmate Requested Witnesses

Inmate requested witnesses will be escorted into the viewing room fourth, taking their places upon the south risers.

2. Allocation of Available Space:

The total capacity of the witness area of the execution chamber is fifty (50) persons. The distribution of those present shall be as follows:

Attorney General	1
Staff	4
Official Witnesses	12
Governor's Witnesses	4
Director's Witnesses	3
YACA Witnesses	2
News Media Witnesses	17
Witnesses Requested by Inmate-Family and Friends	5
Spiritual Advisors	2
TOTAL	50

3. Request for Witnesses by the Condemned Inmate:

a. All requests to witness an execution, including the inmate's request to have family or friends present, shall be directed in writing to the Warden. The Warden shall choose those persons who will be allowed to do so and will notify them, in writing, no later than seven (7) days before a scheduled execution, pursuant to Section 3605 of the Penal Code.

4. Selection of News Media Witnesses (maximum 17):

a. When an execution is scheduled, the Warden will request that the Assistant Director, Communications notify the media and establish a filing period in which to accept media requests to witness the execution. All media requests to witness each execution shall be directed in writing to the Communications Office, Headquarters. All letters of request will be date stamped upon receipt. They will only be considered for the scheduled execution and will not be kept "on file." Requests will only be accepted immediately prior to the date of execution and not after the filing period. Media is defined in Title 15, CCR Section 3000 and DOM subsection 13010.5.

b. The Assistant Director-Communications shall consult with the Warden and his Public Information Officer and assist them in selection of the members of the news media to witness an execution. All media witnesses must agree to the use of a "pool" method and all members must agree to release information simultaneously to all other news agencies at a press conference held as soon as possible after the execution. The media witnesses will not be permitted

any cameras, tape recorders, or drawing implements, etc., in the witness area. Pencils and notepads will be provided.

5. Procedures for Selecting Victim Family Witnesses:

a. The highest priority will be given to include victims' family members who request to witness the execution procedure. If a large number of victims exist, the selection criteria shall attempt to include at least one family member per victim.

6. Procedures for Processing Witnesses:

a. All witnesses need to arrive at the institution's West Gate at the time designated by the Warden. Parking will be in the designated parking area. All witnesses will be processed through the Inspectoscope Gate.

1) No blue jeans, i.e., jeans-style blue, black, or gray pants or Levi's.

2) No cameras or recording equipment. Pencils and notepads will be furnished to media witnesses.

b. All witnesses must have a photo I.D.

6. Witnesses Accommodation Prior to Execution:

a. After processing, witnesses will be escorted to their designated areas until time to move to the execution chamber. At a time announced by the Warden, the witnesses will be escorted to the witness area and directed to their designated places.

7. Witness Accommodation After Execution:

a. After the announcement of death, the official and other witnesses will be escorted to a designated area. The inmate's witnesses will be transported to their transportation at the West Gate.

b. The media witnesses will be transported to the media staging area to await the Warden's press conference approximately one hour after a scheduled execution.

D. NEWS MEDIA

1. Responsibility:

The Public Information Officer, under the direction of the Warden, in conjunction with the Assistant Director of Communications, is responsible for coordination of news media personnel pursuant to an execution.

2. Media Access to the Institution:

Members of legitimate media, as defined in Title 15, CCR Section 3000 and DOM subsection 13010.5, will be allowed on San Quentin grounds on the day and time specified by the Warden. Requests must be made to the Assistant Director, Communications, in writing. A maximum of 125 non-witness news media personnel will be permitted to remain in the IST hall during and after the execution to await the Warden's post execution press conference. News media representatives who receive a letter of authorization from the Warden will be admitted to the institution, provided they are properly credentialed and attired.

3. Coordination of Non-witness News Media:

a. All non-witness media members need to arrive at the institution's West Gate on the day and time specified by the Warden. Parking will be in the designated parking area. Media broadcast vans will be admitted to the institution grounds on a space-available basis and prior written approval of the Warden. Requests for such accommodations should be made when requesting to cover the event. All media members must have a photo I.D. and a letter signed by the Assistant Director of Communications.

The media members will be admitted and processed at the West Gate and escorted to the IST Building by the Administrative Assistant.

b. After the execution, the media witnesses will join the non-witness media as soon as possible at the IST Building for the media press conference, where they will relate what they witnessed to the media non-witnesses. The Warden's press conference will follow at about one hour after an execution. At the conclusion of the Warden's press conference, all media personnel will be escorted to the West Gate, including broadcast vans.

4. Condition for Admittance of News Media Representatives:

a. No "blue jeans" are allowed. "Blue jeans" are defined as any denim trousers colored any shade of blue, black, or gray.

b. Cameras (still and video), recording equipment and other equipment will be allowed, subject to search.

c. All media broadcast vans will be parked in the parking area adjacent to the IST building. Cameras and recording equipment will only be allowed in the IST Building and in the parking area.

d. Satellite link-up vans may be allowed into the lower staff parking lot next to the visiting lot by prior arrangement.

5. Interviews with Condemned Inmates:

All interviews will be consistent with departmental policy.

6. Information Releases:

a. The names of the 12 official witness will not be released.

b. The names of execution team members will not be released, nor will they be available for interviews or photographs.

c. The Public Information Officer, at the direction of the Warden and Assistant Director, Communications, will be responsible for all news releases prior to, during and after an execution and for the developing of all necessary press and information releases.

d. The Warden, with the assistance of the Assistant Director, Communications and Public Information Officer, will hold a press conference approximately one hour after a scheduled execution. No other interview will be given by the Warden after the news conference is completed.

E. EXECUTION CHAMBER OPERATION

1. Personnel:

a. Responsibilities:

1) WARDEN: The Warden shall have the overall responsibility for the execution and will work and train closely with all personnel responsible for all phases of the procedure. The Warden shall select the execution team.

2) CHIEF DEPUTY WARDEN: The Chief Deputy Warden shall be responsible for the security of the institution and will be in command of the Emergency Operations Center (EOC). The Chief Deputy Warden will be in command of SERT/NMT and other special security forces.

3) ASSOCIATE WARDEN, UNIT III: The Associate Warden, Unit III shall accompany the Warden on the day of the scheduled execution into the chamber anteroom.

4) CAPTAIN CENTRAL OPERATIONS: The Captain, Central Operations shall coordinate institutional operations. Responsible for sanitation of visiting areas, lounge areas, and entry road areas.

5) PUBLIC INFORMATION OFFICER: Public Information Officer shall be responsible for all news releases prior to, during, and after an execution.

6) ADMINISTRATIVE ASSISTANT: Administrative Assistant is responsible for escorting the non-witness media members to the In-Service-Training building and providing security for the special media vans.

7) LIEUTENANT IN CHARGE OF THE EXECUTION CHAMBER: The Lieutenant in Charge of the execution chamber is responsible for the direct supervision of the execution team, as well as functioning as a liaison with the Warden. He/she is responsible for the necessary security integrity of the chamber areas and related functions. Responsible for the sanitation of chamber and adjacent areas.

8) RECORDER: A designated team member shall keep accurate records of time that each phase of the execution takes place.

9) THE DEATH WATCH CELL SERGEANT AND OFFICERS: The Death Watch Cell Sergeant and officers assigned to the overnight detail are responsible for the security of the condemned inmate(s) throughout the night until execution time, under the direction of the Lieutenant in Charge of the Chamber. If the condemned inmate is female, one of the officers shall be female.

10) WITNESS AREA OFFICERS: The witness area officers shall station themselves in the witness area during an execution

11) OTHER EXECUTION TEAM OFFICERS: The other execution team officers shall perform duties as assigned by the Lieutenant in Charge of the Chamber.

2. Facility:

a. Description of Execution Chamber:

1) The lethal execution chamber for the State of California is a self-contained unit located at the California State Prison at San Quentin. The chamber area consists of the witness area, two (2) holding cells, the chemical room, kitchen/officers' area, anteroom and execution chamber.

2) The witness area is accessible directly by a door located between the main visiting room and the East Block visiting room. This area can be isolated from

the rest of the chamber. Visibility during an execution is through five (5) windows. Capacity of this area is fifty (50) persons.

3) The two (2) holding cells each contain a toilet and sufficient room for a mattress.

4) The chemical room contains storage cabinets, work bench, and two (2) chemical mixing pots as well as pipe work and valves. This room is utilized during executions by lethal gas.

5) The kitchen/officers' area has a small sink, cabinet and counter area as well as a resting area for staff members.

6) The anteroom contains several valves and the chamber immersion lever, used during execution by lethal gas. Access to the witness area, or to North Block is through two (2) separate solid iron doors. Also in this area are direct telephone line utilized by the State Supreme Court and Attorney General's office.

3. Execution Chamber Maintenance:

A constant state of readiness and the proper safe operation of the execution chamber requires periodic inspection and maintenance of the chamber throughout the year.

The door to the execution chamber is to remain locked in the open position when not in use or testing.

To prevent corrosion, there is a natural draft to exhaust stack which keeps the chamber dry and free of any drain odor.

Total body fluid precautions will be instituted for infection control.

4. Lethal Injection Execution:

a. Chemicals needed for execution:

1) Sodium Pentothal, 5.0 Gm, plus one unopened backup.

2) Normal Saline, 20 cc.

3) Pancuronium Bromide (Pavulon), 50 mgm per 50 cc.

Five (5) 10 cc. ampules of 10 mgm each in each of three (3) syringes

Total injection; 100 cc/100 mgm., or 2 syringes. One extra made up as stand-by.

4) Potassium Chloride, 50 milequiv. per 50 cc.

Five (5) 10 cc. ampules of 10 milequiv. in each of three (3) syringes

Total injection; 100 cc/100 mgm., or 2 syringes. One extra made up as stand-by.

b. Equipment and Materials:

1) One (1) Sodium Pentothal, 5 gm., w/diluent

2) Twenty (20) Pancuronium Bromide, 10 mgm. ampules (Pavulon)

3) Twenty (20) Potassium Chloride, 10 milequiv. ampules

4) Ten (10) Syringes, 50 cc

5) Ten (10) Syringes, 20 cc

6) Ten (10) Needles 18 Ga., 1"

7) Five (5) Angiocaths, 20 Ga., 1"

8) Five (5) Angiocaths, 18 Ga., 1"

9) Five (5) Angiocaths, 16 Ga., 1 3/4"

10) Four (4) Normal Saline, IV bags, 1000 cc

11) Twelve (12) Extension sets, 72" long

12) One (1) Box alcohol preps

13) Four (4) Rolls adhesive tape, 1"

14) Four (4) Rolls adhesive tape, 2"

15) Four (4) Rolls adhesive tape, 3"

16) One (1) Pair scissors, Bandage, pr.

17) Six (6) Tourniquets

18) Box gloves, surgical, Size 7, sterile

19) Box gloves, surgical, Size 9, sterile

20) Box surgical masks

21) Three (3) Flashlights, w/batteries

22) Ten (10) Chux

23) Two (2) Arm Boards

24) Six (6) 3 Way Stopcocks

25) Restraint Gear
Department approved handcuffs and leg irons.

26) Cardiac Monitor
Two (2) sets

27) Wall Clocks
Two (2)

28) Cleaning Supplies
As required for ongoing maintenance of chamber and onsite facilities.

29) Light Bulbs – assorted wattage

30) Hand soap

31) Paper Towels

32) Toilet Paper

33) Mop-up Towels

34) Visiting Room Buffer
Used on regular basis to wax floors, etc.

c. Inmate(s) Needs on Overnight Status:

1) Bed Mattress

2) Blanket

3) Pillow

4) Electric Heater and extension cord

5) AM/FM Radio

6) Television

7) Inmate Clothing (3 sets)

State issue trousers
State issue undershorts
State issue undershirt
State issue socks
State issue blue shirt

In the event the condemned is a female, the clothing consists of brassiere, panties, and blue dress.

Female clothing will be provided by the Central California Women's Facility (and delivered with the condemned female 48 hours prior to actual execution date.)

8) Towels

9) Chess and Checkers set

10) Coffee and/or Approved Drinks (non-alcoholic)

11) Last Dinner Meal (as reasonable as possible)

ASCERTAIN DISPOSITION OF PERSONAL PROPERTY FROM CONDEMNED INMATE AFTER HIS/HER PLACEMENT IN OVERNIGHT CELL (DONATION, MAIL TO RELATIVE, ETC.)

d. Procedures:

1) Two (2) Weeks Prior to Scheduled Execution:

(a) The Lieutenant in Charge of the Chamber will notify the Warden that the following procedures have been accomplished:

— Specific staff assignments to the execution detail have been made.

Preliminary chamber area readiness and operational testing procedures have been made. Necessary maintenance work will be performed in the presence of the Lieutenant in Charge of the Chamber or his/her designate (Chamber Operator/Chemical Operator.)

Ensure the chamber areas have full complements of necessary household and personal needs of the condemned inmate and all required clothing is available.

Ensure the direct telephone lines utilized by the State Supreme Court and the Attorney General's office are on-line and working.

Inventory all chemicals and equipment necessary in chamber operation are available and under proper storage.

2) One (1) Week Prior to Scheduled Execution:

(a) The Lieutenant in Charge of the Chamber will inspect the chamber areas for the following:

Ensure all maintenance work requested has been completed and the chamber is ready.

Preliminary and operational tests are again performed to ensure readiness of chamber areas. The prison Correctional Plant Manager (CPM), and/or Maintenance Supervisor (Execution Team Liaison) will be present during this operational check of the chamber.

Ascertain all necessary clothing, personal items, overnight detail equipment, etc., are properly available and operational. The Lieutenant in Charge of the Chamber will notify the Warden of this inspection. At this point, all equipment should be operational and functioning properly.

All necessary supplies should be in the chamber area or where designated and ready for use.

The entire area should be in a high state of cleanliness and ready for outside witnesses.

3) Three (3) Days Prior to Scheduled Execution:

(a) The following procedure will be strictly adhered to without exception:

The execution chamber area will be closed to any and all persons not specifically cleared by the Warden. The Lieutenant in Charge of the Chamber and necessary team members are authorized access.

All traffic into the chamber areas will be approved by the Lieutenant in Charge of the Chamber, who will directly supervise necessary traffic into the area.

The Lieutenant in Charge of the Chamber will conduct the following pre-execution inventory and equipment check:

(1) Members of the injection team shall conduct an equipment check of all materials necessary to perform the execution.

(2) The inventory shall be conducted not less than twenty-four (24) hours, and not more than ninety-six (96) hours, before the scheduled execution.

(3) Expiration and/or sterilization dates of all applicable items shall be checked on each individual item.

(a) Outdated items (e.g. Normal Saline bags) shall be replaced immediately.

(b) Sterilized packs bearing a sterilization date in excess of thirty (30) days shall be replaced or re-sterilized immediately.

At this time, the Lieutenant in Charge will be responsible for the security of the chamber. A search of all materials that will come into contact with the condemned inmate(s) will be made by the Execution Team. All equipment will be in working order and functioning properly.

All chemicals will be stored under appropriate controls to prevent tampering.

NOTE: In the event the condemned inmate is female, she will be transported from the Central California Women's Facility not earlier than three (3) days prior to the scheduled execution date. The condemned female will be placed upon arrival in the overnight cell and necessary coverage and supervision of the condemned inmate as outlined in this procedure for male inmates will be arranged by the Lieutenant in Charge of the Chamber.

4) **<u>One (1) Day Prior to Scheduled Execution:</u>**

The Execution Team members as designated by the Lieutenant in Charge of the Chamber will perform the following:

(a) Obtaining Drugs:

(1) During the afternoon immediately preceding an execution by lethal injection, a member of the injection team shall proceed to the pharmacy to obtain the necessary agents (drugs) for the procedure.

(2) When the drugs have been issued, and quantities verified, they shall be placed in the Lethal Injection Drug Box, and the box locked.

(3) A member of the injection team shall maintain personal, physical custody of the locked drug box until such time as it is opened for use, or for return if not used.

(b) Chamber Kitchen:

Check linen - includes officer cot and sheets, pillow, pillowcase and six (6) towels. Contact the laundry if additional supplies are needed.

Contact the Food Manager for foodstuffs; fruit, coffee, sugar, milk, and ice.

(c) Overnight Cells:

Thoroughly search cells, depending on number of executions set for the next day.

Obtain overnight cell furnishings. For each cell to be used, obtain one (1) mattress, one (1) blanket, and one (1) pillow from the storage closet located in the witness room.

Very thoroughly search each item. Place in overnight cell, spreading the blanket over the mattress. Place the pillow at the head of the mattress. LOCK THE CELL DOORS.

(d) **At the appropriate time commensurate with the day and time of the execution:**

(1) Lieutenant in Charge of the chamber will contact the Warden for last minute information.

(e) **At the appropriate time commensurate with the day and time of the scheduled execution:**

(1) The appropriate number of supervisorial and custody staff as determined by the Associate Warden of Unit III will arrive at the condemned row office. One of the detail officers searches the clothing to be worn by the condemned inmate. The unit lieutenant makes the necessary notation in the condemned row log book. The escort team then enters the condemned tier and proceeds to the cell of the condemned inmate. While in the cell, the inmate is given an unclothed body search and then placed in mechanical restraints. The inmate, wearing his underclothing, is escorted to the holding cell where he is retained pending an unclothed body search which includes a metal detector scan.

(2) Following this, he is given a complete new outfit of clothing that was previously searched by the officer. This clothing consists of undershirt, shorts, socks, blue jeans, blue shirt, and canvas slippers. All items of clothing are regulation for the institution. After the inmate is clothed, he is placed in restraint equipment. He is then escorted to the elevator via the condemned unit door, by the aforementioned officers, then to the lower floor of the cell block and to the door leading to the overnight cell area. A lieutenant, as per previous arrangements, is stationed on the opposite side of the door in the overnight cell area, with the necessary key which he passes to the officer through the door aperture. The door is unlocked and the officers escort the condemned inmate into one of the overnight cells, and the restraint equipment is removed.

(3) One officer will be posted at the door leading to the overnight cell area after the condemned inmate is placed in the

cell. This position will be posted during the third watch and first watch preceding the execution.

(4) Equipment required for this position is one (1) handheld radio and key ring.

(5) Commencing immediately upon posting, the officer will make a visual security check through the door aperture leading to the overnight cell and will continue the security checks every 30 minutes.

(6) The Lieutenant in Charge of the chamber asks the inmate who his spiritual advisor is, then informs the condemned inmate of the time his dinner will be served.

(7) The Lieutenant informs the inmate that he will return to see him later in the evening, or sooner if the inmate desires. At this point, the inmate is introduced to the sergeant and two (2) officers who will be with him throughout the night. All staff, except the overnight detail, leave the chamber area, and the Lieutenant in Charge of the chamber reports directly to the Warden.

(f) **At the appropriate time commensurate with the day and time of the scheduled execution:**

(1) Dinner is brought to the area by a sergeant and the supervising cook. The dinner normally is the meal requested by the inmate insofar as is reasonable and possible to obtain. Coffee is available throughout the night.

(g) **At the appropriate time commensurate with the day and time of the scheduled execution:**

(1) The inmate is usually visited by the spiritual advisor of his choice and the Warden. The Lieutenant in Charge of the chamber returns during the evening to check with the overnight sergeant and officers and stays as

required. He remains on duty through the execution. All visitors in the overnight cell area must be approved by the Warden.

(2) The condemned inmate is allowed reasonable last requests. Normally, these requests include the following:

* Special items of food and soft drinks;

* Special programs on the radio or television set;

* Funds on the books be transferred as he might designate;

* He will be allowed to walk to the chamber without assistance;

* He will be allowed to send out last letters;

* The reporters and newspapers not mention his family, etc.

(3) Requests, other than normally routine, are processed through the Warden or the Officer of the Day.

(4) Routine requests are handled by the Lieutenant in Charge of the chamber or the respective Watch Commander on duty.

(5) The Watch Commander will make routine checks with the overnight officers during their respective shifts.

(6) The telephone located in the chamber kitchenette is restricted to the Warden, Lieutenant in Charge of the chamber, the Administrative Officer of the Day, and the Watch Commander on duty.

5) **DAY OF SCHEDULED EXECUTION:**

(a) **Approximately 3 hours prior to the execution:**

(1) The state employee spiritual advisor may arrive at the overnight cell and, if requested to do so by the condemned

inmate, remains until after the execution. On other occasions, he may give communion and then return 1 hour prior to the execution to remain until after the execution.

(b) **Approximately 2 hours prior to the execution, the following procedure will be followed:**

(1) Members of the injection team shall enter the injection room and immediately reinventory the supplies and equipment to insure that all is in readiness, and if applicable, obtain replacement items from the pharmacy.

(c) **Approximately 1 hour prior to execution, the following procedure will be followed:**

The IV set-up will proceed as follows:

(1) The connecting needle of Administration Set shall be inserted into outlet of the bag of Normal Saline IV solution.

(2) The on-off clamp located between the "Y" injection site and the needle adapter shall be removed and discarded. The flow of solution shall be controlled by the Flo-Trol clamp located above the "Y" site.

(a) The lip of the neoprene diaphram on the "Y" injection site shall be rolled back so that it can easily be removed for insertion of syringe tips instead of a needle.

(b) A 72-inch Extension Set shall be connected to the needle adapter of the Administration Set.

NOTE: For the set-up for administration into the distal arm, a second Extension Set shall be required due to the additional distance.

(3) An Angiocath (no smaller than 20 Ga. X 2") shall be connected to the needle adapter of the Extension Set. Optimal

injection flow may be achieved with a 14 Ga. or 16 Ga. Angiocath, if the veins will permit the use of the larger size.

(4) The tubing shall be cleared of air and the Angiocath recovered. The set-up is ready for use.

(5) Steps 1 through 6 shall be repeated for the second set-up.

(6) The syringes containing the drugs shall be prepared and loaded in the following order:

(a) Two 35-cc syringes, each containing 20 cc of sterile Normal Saline. Label syringes "NS".

(b) Three 50-cc syringes, each containing 50 milequiv of Potassium Chloride in 50 cc. Label syringes "3".

(c) Three 50-cc syringes, each containing 50 mgm of Pancuronium Bromide in 50 cc. Label syringes "2".

(d) One 35-cc syringe containing 5.0 Grams of Sodium Pentothal. (Kit contents to be dissolved in 20-25 cc of the accompanying diluent to attain complete, clear suspension.) The Sodium Pentothal, being a Federally controlled drug, shall be prepared last, when it appears that it shall actually be used. Label syringe "1".

(7) A pre-medication is available if requested by the inmate. Valium, or its equivalent, a skeletal relaxant, will be administered if requested by the inmate and approved by the Health Care Manager.

It is noted that three syringes of Pavulon and three of Potassium Chloride are prepared, even though the injection procedure only calls

for two of each. The extra syringes are to be prepared as "stand-bys", in the event one of the others is dropped in handling during the injection procedure. This will take place prior to moving the inmate into the execution chamber.

Chamber operator calls outside telephone operator for time check and sets the clock. Takes position on right side of chamber door. Opens chamber door upon Warden's signal to do so.

(d) **Approximately 45 minutes prior to execution, the following procedure will be followed:**

(1) The Warden and two (2) physicians arrive at the execution chamber via the outside entrance. The Warden talks briefly with the condemned inmate.

(2) The condemned inmate remains in the cell, accompanied by the spiritual advisor, until signaled by the Warden that the appointed time has arrived.

(e) **Approximately 10 minutes prior to execution, the following procedure will be followed:**

(1) The Warden orders that the witnesses be brought into the witness area and take their designated places.

(2) Escorting officers bring in the witnesses and then leave the area, to wait outside until after the execution when they will again escort the witnesses to their designated areas.

(f) **When the appointed time for the execution has arrived and the signal to commence has been given by the Warden:**

(1) The inmate is moved into the execution chamber and secured onto the table. The heart monitor equipment is then connected to the monitor. The physician will verify the heart beat registers on the monitor.

(2) The following execution procedure is started:

The angiocath shall be inserted into a usable vein by a person qualified, trained, or otherwise authorized by law to initiate such a procedure. The flow of **Normal Saline** shall be started and administered at a slow rate of flow.

The above procedure shall be repeated on a secondary location on the inmate. This line shall be held in reserve as a contingency line in case of a malfunction or blockage in the first line.

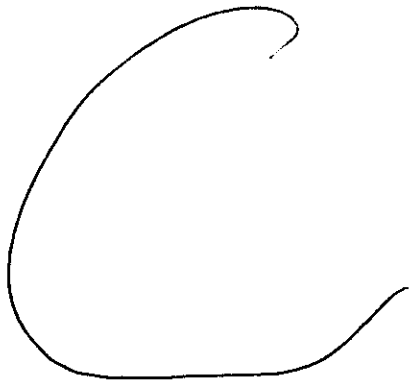
NOTE: At this point, the administration sets shall be running at a slow rate of flow, and ready for the injection of syringes containing the injection agents. Observation of both set-ups to insure that the rate of flow is uninterrupted shall be maintained. **NO FURTHER ACTION** shall be taken until the pre-arranged signal to start the injection of lethal agents is given the Warden.

After the IV is started, injection team members vacate the chamber.

(3) All officers vacate the chamber, the door is closed by the chamber operator and sealed by the Lieutenant.

(4) The chamber operator then turns on the exhaust fan.

(5) Total anonymity of the injection team members in the injection room shall be maintained. At **NO TIME** shall they be addressed by name, or asked anything that would require an oral response. The members of the injection team shall remove all jewelry and wear long sleeve shirts to cover any identifiable marks, tattoos, or scars.



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Capital Punishment

Condemned Inmate Summary (.pdf)

Current Condemned Inmate List (.pdf)

Death Sentence Status, 1978 to Present

History of Capital Punishment in California

Capital Punishment -Key Events

Inmates Executed, 1978 to Present

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California Department of Corrections

My CA

Lethal Injection Procedures

When Execution Order Is Received

As soon as the execution order is received, the condemned inmate is moved into a special security s prison. Based on hourly checks, staff document his/her behavior and bring anything unusual to the v attention.

The inmate receives priority visiting privileges; no visitors are turned away without authorization of th Every effort is made to accommodate visits by the inmate's attorney including weekend or holiday vi necessary.

Pre-Execution Reports

Two reports are prepared within three weeks of the established execution date. The first is 20 days b execution; the second is seven days before execution. Each report includes:

- Psychiatric report - Results and interpretation of examinations, interviews and history of the psychiatrists which will be used to determine the inmate's sanity.
- Chaplain report - Comments on the inmate's spiritual and emotional well-being.
- Summary of behavior - Observations noted by case worker and custody staff.
- Cover letter from warden - Includes firsthand information from interviews, observations or co with the inmate and his/her family or friends.

The seven day pre-execution report discusses any changes that have occurred since the first report

Sanity Review Requests

Within 30 to seven days before the execution, the inmate's attorney may submit current psychiatric i may have a bearing on the sanity of the condemned inmate. This information will be provided to the psychiatrists to consider in completion of the pre-execution psychiatric reports.

Last 24 Hours

During the day before the execution, the warden will make special arrangements for visits by approv members, spiritual advisors, and friends.

About 6 p.m. the day before the execution, the inmate will be moved to the death watch cell which is execution chamber. From then on, a three-member staff unit will provide a constant death watch.

Soon after he is rehoused, the inmate will be served his last dinner meal. The prison makes every ef the meal requested by the inmate.

Between 7 and 10 p.m., the inmate may be visited by the assigned state chaplain and the warden. T read, watch television, or play the radio. He can request special food items and coffee or soft drinks.

The family, spiritual advisors and friends the inmate has selected as witnesses may arrive up to two the scheduled execution.

About 30 minutes before the scheduled execution, the inmate is given a new pair of denim trousers a shirt to wear. He is escorted into the execution chamber a few minutes before the appointed time an onto a table. [The chairs previously used for lethal gas executions have been removed.]

The inmate is connected to a cardiac monitor which is connected to a printer outside the execution c is started in two usable veins and a flow of normal saline solution is administered at a slow rate. [On reserve in case of a blockage or malfunction in the other.] The door is closed. The warden issues the order.

The Execution

- 5.0 grams of sodium pentothal in 20-25 cc of diluent
- 50 cc of pancuronium bromide
- 50 cc of potassium chloride

Each chemical is lethal in the amounts administered.

At the warden's signal, sodium pentothal is administered, then the line is flushed with sterile normal s This is followed by pancuronium bromide, a saline flush, and finally, potassium chloride. As required California Penal Code, a physician is present to declare when death occurs.

After all witnesses have left, the body is removed with dignity and care. Typically, the family claims t the State makes the arrangements.

Chamber Description

The California execution chamber is a self-contained unit at San Quentin State Prison which include

- Witness area—Entered via a door to the outside, the witness area has a view of the chambe windows.
- Execution chamber—An octagonal vacuum chamber, approximately 7-1/2 feet in diameter. I through a large oval door at the rear of the chamber.
- Anteroom—Contains three telephones. One is kept open for use by the Governor; the other the State Supreme Court and Attorney General's Office; the third is connected to the Warde lethal injections are administered from the anteroom. The area also includes the valves and used for executions by lethal gas.
- Chemical room—Includes storage cabinets and a work bench, plus the chemical mixing pots valves used for executions by lethal gas.
- Two holding cells—Each contains a toilet and room for a mattress.
- Kitchen/officers' area—Includes a sink, cabinet, counter area and resting area for staff.

Witnesses

Up to 50 individuals may witness an execution. The following are specified in the Penal Code:

Warden* 1
Attorney General 1
Reputable citizens 12
Physicians* 2
Inmate family/friends 5 (if requested)
Inmate spiritual advisor 2 (if requested)

State procedures also allow for:

News media representatives 17
State-selected witnesses 9
Staff escorts 4

Last Modified: 12/14/2004

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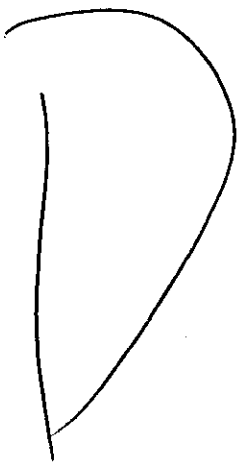

STATE OF CALIFORNIA | DEPARTMENT OF CORRECTIONS

CALIFORNIA STATE PRISON
SAN QUENTIN, CALIFORNIA

LETHAL INJECTION - EXECUTION RECORD

No. C-44600 Name BONIN, WILLIAM G. Age 49
Date Received 03-12-82 Date Executed 2/23/96
Doctors

OPERATION	TIME	RATE		REMARKS
		HEART	RESP.	
Injection Drugs on Hand	2300			
Prisoner Entered Chamber	2336			1st minute Tachycardic - hyper[illegible]
Saline Solution IV Set and Running	2353			1 to 2 min - apnea
Chamber Door Locked	0003	60	24	
Drug - Sodium Pentothal Started	0008	84	22	VARIED PULSE 97 to 81
Drug - Pancuronium Bromide Started	0009	73	0	0010 2nd Pavulon given
Drug - Potassium Chloride Started	0011	·	0	Gradual fall in pulse
Special Comments				70 to 60 to 50
				then sudden drop (precipitous
				in pulse to 20, 10, 1 &
				0 (time 0011 to 0013)
				including flat line with
				two ectopic narrow
				complexes minutes apart;
				two burst of low
				amplitude disorganized
				arrhythmia - also
Respirations Ceased	~~0009~~ 0009			few [illegible] QRS.
Cardiac Monitor - Flatline	0013			(not heart sounds, [illegible] the
Prisoner Pronounced Dead	0013			ECG monitor)

Disposition of Remains:

See EKG strip

CDC-226A (Revised 1-96)

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EXHIBIT C

STATE OF CALIFORNIA

DEPARTMENT OF CORRECTIONS

CALIFORNIA STATE PRISON
SAN QUENTIN, CALIFORNIA

LETHAL INJECTION - EXECUTION RECORD

No. C-03801 Name KEITH DANIEL WILLIAMS Age 48
Date Received (Chamber 5-2-96) Date Executed 5-3-96
Doctors

~~OPERATION~~ PROCEDURE	TIME	RATE		REMARKS
		HEART	RESP.	
Injection Drugs on Hand	1130			
Prisoner Entered Chamber	1141			
Saline Solution IV Set and Running	1154			2nd IV @ 11:58
Chamber Door Locked	1202	155	20	
Drug - Sodium Pentothal Started	1203	141	20	
Drug - Pancuronium Bromide Started	1204	100	0	
Drug - Potassium Chloride Started	1205	80	0	
Special Comments				PRONOUNCED @ 12:08
EKG Monitor				
1st 30sec — sinus tachycardia T̄S 155-140				
1st minute sustained sinus tachy 130-140				
Then gradual slowing + slight ST depression; QRS narrow + tachy				
Gradual ↓ heart rate 120-110-100, c̄ gradual [illegible]				
↓ST, merging c̄ T wave				
Marked Bradycardia with wide QRS (deep S wave, [illegible] ↓ST - no T wave)				
Respirations Ceased	1205			
Cardiac Monitor - Flatline	1206			(00 06) [illegible]
Prisoner Pronounced Dead	1208			(00 08)

Disposition of Remains:

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CDC - 716A (Revised 1-96)

STATE OF CALIFORNIA — DEPARTMENT OF CORRECTIONS

CALIFORNIA STATE PRISON
SAN QUENTIN, CALIFORNIA

LETHAL INJECTION - EXECUTION RECORD

No. C45500 Name JATURUN SIRIPONGS / [illegible]
Date Received [redacted] Date Executed 2/9/99
Doctors [redacted]

OPERATION	TIME	RATE		REMARKS
		HEART	RESP.	
Injection Drugs on Hand	2300			
Prisoner Entered Chamber	2339			
Saline Solution IV Set and Running	2349			
Chamber Door Locked	2356	97	10	
Drug - Sodium Pentothal Started	0004	87	40	
Drug - Pancuronium Bromide Started	0008	100	8	
Drug - Potassium Chloride Started	0011	70	-0-	
Special Comments				
Respirations Ceased	0009			
Cardiac Monitor - Flatline	0019			NODAL RHYTHM @ 0015
Prisoner Pronounced Dead	0019			EKG changed to flat 0019
Disposition of Remains:				

CDC-[illegible] (Revised 1-94)

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STATE OF CALIFORNIA — DEPARTMENT OF CORRECTIONS

CALIFORNIA STATE PRISON
SAN QUENTIN, CALIFORNIA

LETHAL INJECTION - EXECUTION RECORD

No. C50400 Name MANUEL BABBIT Age
Date Received [redacted] Date Executed 5/4/99
Doctor [redacted]

OPERATION	TIME	RATE		REMARKS
		HEART	RESP.	
Injection Drugs on Hand	0013	—	—	
Prisoner Entered Chamber	0013	—	24	
Saline Solution IV Set and Running	0019		30	
Chamber Door Locked	0021	96	24	
Drug - Sodium Pentothal Started	0028	95	20	
Drug - Pancuronium Bromide Started	0031	95	20	SHALLOW RESPIRATIONS
Drug - Potassium Chloride Started	0035	96	—	
Special Comments				
BASED SPASMODIC MOVEMENTS OF UPPER ABDOMEN W/ CHEST @ 0032 LASTING ≤ 10 SECONDS				
Respirations Ceased	0029			
Cardiac Monitor - Flatline	0037			
Prisoner Pronounced Dead	0037			
Disposition of Remains:				

CDC-256A (Revised 1-96)

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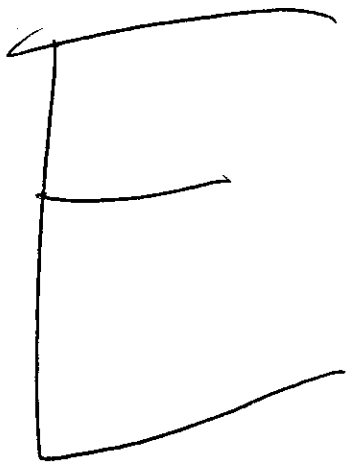

DECLARATION OF MARGO A. ROCCONI

I, Margo A. Rocconi, declare and state as follows:

I have personal knowledge of the following and, if called to testify, I could and would competently testify thereto:

1. I am a deputy federal public defender at the Federal Public Defender's Office in the Central District of California. I represented Stephen Wayne Anderson in federal habeas proceedings challenging his conviction and death sentence.

2. I was a witness to the execution of Stephen Wayne Anderson on January 29, 2002 at San Quentin State Prison in California. At about 11:40 p.m. on January 28, 2002, I was transported to the execution viewing area with two other witnesses. The three of us were the last witnesses to enter the viewing area just before 12:00 a.m. on January 29, 2002. We stood on two steps to the left side of the execution chamber. Shortly thereafter, Stephen Anderson was brought into the execution chamber and strapped down onto the table. His right foot twitched from time to time.

3. A male technician came in to the room with a caddy full of syringes and needles. He tried for quite awhile to insert the needle into a vein in Mr. Anderson's left arm. He was not able to find a vein and Mr. Anderson's arm began to bleed. The technician wiped the blood off with gauze several times. The technician became frustrated, removed his gloves, put them back

MAR

EXHIBIT B

on, and started over. During this time, Mr. Anderson looked over at his arm several times to see what was happening. Mr. Anderson attempted to help the technician find a vein by pumping his fist. After what took at least 3 to 4 minutes, the technician successfully inserted the needle in Mr. Anderson's arm and taped it down.

4. The male technician then left the room and a female technician entered. She inserted a needle into Mr. Anderson's right arm in less than one minute.

5. Mr. Anderson's table was then turned and the IV lines were attached to a mechanism in the wall of the execution chamber. At this point, Mr. Anderson lifted his head up several times and looked at the three of us standing on the risers.

6. Mr. Anderson then laid his head back down and waited. Within a minute his eyes closed and his head rolled over slightly. Thereafter, his cheeks began puffing as if air were coming out of his mouth. Within moments after that, Mr. Anderson's chest and stomach area began to heave upward. The convulsions continued with some irregular pauses in between. Altogether, Mr. Anderson's chest and stomach heaved more than 30 times.

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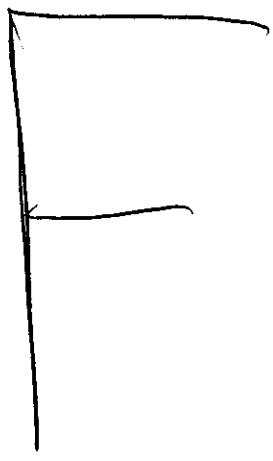
MAL

7. More than 10 and less than 15 minutes elapsed from the time that Mr. Anderson had closed his eyes until the guard announced that he was dead. I never looked away during that time period.

I declare under penalty of perjury under the laws of the United States of America and the State of California that the foregoing is true and correct.

EXECUTED this 28th day of January, 2004.

Margo A. Rocconi



MICROSCOPIC

HARPER, EDWARD LEE - ME99-346

HEART	NCH
LUNGS	Scattered edema
KIDNEY	Abundant pink fluid in Bowman's Space
BRAIN	NCH

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COMMONWEALTH OF KENTUCKY
JUSTICE CABINET
OFFICE OF THE
CHIEF MEDICAL EXAMINER
URBAN GOVERNMENT CENTER
810 BARRET AVENUE
LOUISVILLE, KENTUCKY
40204-1702

SECTION OF FORENSIC PATHOLOGY
AND CLINICAL FORENSIC MEDICINE

TELEPHONE: (502) 852-5
FACSIMILE: (502) 852-17

FINAL DIAGNOSIS

HARPER, EDWARD LEE - ME99-346

I. Judicial execution by lethal injection
   - A) Postmortem heart blood toxicology
     1) Pancuronium 39 mg/L
     2) Thiopental 6.5 mg/L
     3) Chlorpheniramine 0.04 mg/L
   - B) Postmortem vena cava toxicology
     1) Pancuronium 30 mg/L
     2) Thiopental 3 mg/L
   - C) Postmortem right axillary vein toxicology
     1) Pancuronium 18 mg/L
     2) Thiopental 3 mg/L
   - D) Heart blood electrolytes:
     1) Sodium 147 meq/L
     2) Potassium 32.1 meq/L

II. No evidence of blunt trauma

III. No evidence of significant natural disease

OPINION: Death in this case is due to polypharmacy intoxication as a consequence of judicial execution by lethal injection. (CODE: E961P; E978)

Tracey Corey Handy, MD

DATE PERFORMED: May 26, 1999
DATE COMPLETED: July 9, 1999
COUNTY OF JURISDICTION: Lyon

F-2

POST MORTEM EXAMINATION

OF THE BODY OF

HARPER, EDWARD LEE -ME-99-346

A post mortem examination of the body identified as Edward Lee Harper is performed at the Urban County Government Center on May 26, 1999 at 9:40 a.m. by Dr. Tracey Corey Handy. Attendant is Jason Ritter.

EXTERIOR OF THE BODY

The body is received clad in a red scrub suit, and white briefs. A cloth scapular with Our Lady of Mount Carmel and Saint Simon as well as an unidentifiable saying with the following identifiable words, "Whosoever Has This, Shall Not Suffer Eternal Fire". This scapular is placed within the body bag.

The body is that of a normally developed, normally nourished, white male appearing around the given age of 50 years. The body has a measured height of 71" and a measured weight of 200 pounds. The scalp hair is brown, of normal texture, and generally less than 1" in length. The facial hair is shaven. The pupils are equal, round and 6mm in diameter. The sclerae and conjunctivae are somewhat injected. The irides are blue. Yellow/brown mucoid material exudes from the nose and mouth. The natural anterior dentition is in fair repair. The anterior intra-oral mucosa is atraumatic. The jaw displays rigor mortis. The trachea is in the midline. The supra-clavicular lymph nodes are not palpable. The symmetrical thorax demonstrates no abnormal movability. The abdomen displays a remote, faint, well healed, and obliquely oriented surgical scar progressing infero-laterally in the right upper quadrant. The pubic hair is brown, curly and of normal male distribution with scattered gray hair. The penis is apparently uncircumcised. Both testes are palpable within the scrotal sac. Examination and palpation of the extremities reveals no evidence of peripheral edema, deformity or fracture. Rigor mortis is well developed in the major muscle groups. Lividity blanches posteriorly and over the right aspect of the head and face except over pressure points.

EVIDENCE OF JUDICIAL EXECUTION

EKG pads are present over the anterior thorax. A vascular access line enters the right antecubital fossa. A vascular access line enters the dorsal surface of the left hand. A needle puncture site is identified in the left antecubital fossa.

INTERIOR OF THE BODY

A "Y" incision is carried through a midline panniculus measuring up to 3cm into an abdominal cavity lined with glistening serosa and containing no free fluid. Generally, the intra-abdominal viscera maintain their usual in situ relations. Multiple adhesions are visualized within the right aspect of the abdomen involving both upper and lower

F-3

quadrants. These adhesions prohibit visualization of the liver edge. The vermiform appendix is not identified. Multiple surgical staples are present in the region normally occupied by the vermiform appendix.

The mediastinum is in the midline. The lungs are normally inflated bilaterally. There is no free fluid in either smooth, pleural space. The pericardial sac is opened and noted to contain less than 5ml of clear straw colored fluid.

CARDIOVASCULAR

The heart is of the normal configuration and weighs 420 grams. The epicardial surface contains a normal amount of glistening, yellow adiposetissue. The cardiac chambers are of proportionate capacity. The mural and valvular endocardia are smooth and glistening. The valves display no abnormalities. The papillary muscles and projecting myocardial muscle bundles are of normal prominence. The coronary ostia are in their usual location and give rise to normally distributed coronary arteries. Serial sectioning of the coronary arteries discloses multifocal grade II calcific atherosclerosis of the proximal left anterior descending coronary artery. On section, the firm, brown myocardium is of normal consistency. No focus of scar or acute hemorrhage is demonstrated.

The systemic aorta is of normal caliber and elasticity. The intimal surface is smooth and glistening. The ostia of the large branches are of normal distribution and dimension. Exploration and inspection of the large veins reveals no evidence of ante mortem clot.

RESPIRATORY

The lungs are of the usual lobation and weigh 690 and 600 grams, right and left respectively. Mild amounts of subpleural anthracotic pigment are present within all lobes. The pleurae are generally smooth and glistening. Dissection of the bronchial tree discloses a normal tan epithelium. The bronchial tree contains a moderate amount of aspirated gastric contents. The pulmonary vasculature is of normal distribution and dimension. The lining intima is glistening and smooth. It contains no ante mortem thrombi. Serial sectioning of the pulmonary parenchyma discloses the usual fine, lacy pulmonary architecture. No focus of consolidation, calcification or friability formation is demonstrated. The hilar lymph nodes are moderately anthracotic and non-calcified.

LIVER AND GALLBLADDER

The liver weighs 2290 grams. The hepatic capsule displays multifocal areas of adhesion. It is intact. Serial sectioning of the hepatic substance discloses homogeneous brown substance throughout without focal abnormal markings. The anterior surface of the

right lobe of the liver displays a focal irregular area of capsular thickening and white/yellow discoloration.

The gallbladder is not identified.

PANCREAS

The pancreas is in its usual location and on section is composed of normally lobulated, yellow/tan, soft substance. No focus of calcification is demonstrated.

ADRENALS

The adrenal glands are in their usual location and are of normal size and shape. On section, they are composed of smooth, yellow outer cortical rims, which overlie zones of deeper brown cortical and gray medullary substances.

GENITOURINARY

The kidneys are of similar size and shape. Together they weigh 460 grams. The capsules may be removed easily to reveal smooth, medium brown renal surfaces. On section, the cortices and medullae are well demarcated. The usual arcuate markings are preserved. No abnormality of the calyx, pelvis, cortex or medulla is demonstrated. The ureters are patent.

The bladder lumen contains approximately 30ml of clear, straw colored urine. The openings of the ureters into the bladder are normal. The bladder mucosa is light tan and finely wrinkled.

The prostate gland is of normal size and shape. On section, it is composed of firm, white, almost rubbery substance. No focus of nodularity or yellow discoloration is demonstrated.

SPLEEN

The spleen weighs 180 grams. The capsule is smooth, shiny and intact. On section, no focal abnormal markings are demonstrated. The usual follicular and trabecular markings are preserved.

ALIMENTARY

The smooth-walled esophagus is intact, of usual thickness and gray. Its mucosa is present in normal longitudinal folds. The cardioesophageal junction is easily identified.

The gastric wall is intact and of usual thickness. No abnormality of its serosal surface is demonstrated. The gastric mucosa is present in its normal rugal pattern. The stomach contains approximately 400ml of thick, semi-liquid, partially digested food substance including apparent fragments of bread, tomato and lettuce. The pylorus and duodenum display no abnormality. The small and large intestines are not remarkable.

MUSCULOSKELETAL

Examination and palpation of the spine, ribs, shoulder girdle and pelvis fails to reveal fracture.

NECK

There is no soft tissue hemorrhage within the neck. The hyoid bone and thyroid cartilages are intact. The larynx and trachea are of average caliber and are patent. They are lined with smooth, pale tan epithelium. The vocal cords display no abnormality.

The tongue displays no abnormality.

THYROID

The thyroid gland demonstrates no abnormality.

HEAD

There is no soft tissue hemorrhage within the scalp. The calvarium is intact and displays no abnormality. The dura is of normal tenseness. The superior sagittal sinus is patent and in the midline. The leptomeninges are glistening and translucent. The brain is of normal convolutional pattern and weighs 1500 grams.

Examination of the arteries at the base of the brain reveals them to be of normal distribution and dimension. They are smooth-walled, collapsed and transparent. The uncinate gyri and cerebellar tonsils do not demonstrate pressure phenomena.

Multiple frontal sections of the brain at approximate levels of 2cm reveal normal relations of gray and white substance. No focal abnormal markings are demonstrated. The ventricles contain clear fluid and the lining ependyma is smooth and glistening. The choroid plexuses display no abnormality. The basal ganglia are normal.

Multiple horizontal sections of the cerebellum, pons and medulla reveal normal architecture of these structures without focal abnormal markings.

Examination of the base of the skull, after removal of the brain and dura, fails to reveal fracture.

MICROSCOPIC

HARPER, EDWARD LEE - ME99-346

HEART	NCH
LUNGS	Scattered edema
KIDNEY	Abundant pink fluid in Bowman's Space
BRAIN	NCH

F-7

POST MORTEM EXAMINATION

OF THE BODY OF

HARPER, EDWARD LEE -ME-99-346

A post mortem examination of the body identified as Edward Lee Harper is performed at the Urban County Government Center on May 26, 1999 at 9:40 a.m. by Dr. Tracey Corey Handy. Attendant is Jason Ritter.

EXTERIOR OF THE BODY

The body is received clad in a red scrub suit, and white briefs. A cloth scapular with Our Lady of Mount Carmel and Saint Simon as well as an unidentifiable saying with the following identifiable words, "Whosoever Has This, Shall Not Suffer Eternal Fire". This scapular is placed within the body bag.

The body is that of a normally developed, normally nourished, white male appearing around the given age of 50 years. The body has a measured height of 71" and a measured weight of 200 pounds. The scalp hair is brown, of normal texture, and generally less than 1" in length. The facial hair is shaven. The pupils are equal, round and 6mm in diameter. The sclerae and conjunctivae are somewhat injected. The irides are blue. Yellow/brown mucoid material exudes from the nose and mouth. The natural anterior dentition is in fair repair. The anterior intra-oral mucosa is atraumatic. The jaw displays rigor mortis. The trachea is in the midline. The supra-clavicular lymph nodes are not palpable. The symmetrical thorax demonstrates no abnormal movability. The abdomen displays a remote, faint, well healed, and obliquely oriented surgical scar progressing infero-laterally in the right upper quadrant. The pubic hair is brown, curly and of normal male distribution with scattered gray hair. The penis is apparently uncircumcised. Both testes are palpable within the scrotal sac. Examination and palpation of the extremities reveals no evidence of peripheral edema, deformity or fracture. Rigor mortis is well developed in the major muscle groups. Lividity blanches posteriorly and over the right aspect of the head and face except over pressure points.

EVIDENCE OF JUDICIAL EXECUTION

EKG pads are present over the anterior thorax. A vascular access line enters the right antecubital fossa. A vascular access line enters the dorsal surface of the left hand. A needle puncture site is identified in the left antecubital fossa.

INTERIOR OF THE BODY

A "Y" incision is carried through a midline panniculus measuring up to 3cm into an abdominal cavity lined with glistening serosa and containing no free fluid. Generally, the intra-abdominal viscera maintain their usual in situ relations. Multiple adhesions are visualized within the right aspect of the abdomen involving both upper and lower

quadrants. These adhesions prohibit visualization of the liver edge. The vermiform appendix is not identified. Multiple surgical staples are present in the region normally occupied by the vermiform appendix.

The mediastinum is in the midline. The lungs are normally inflated bilaterally. There is no free fluid in either smooth, pleural space. The pericardial sac is opened and noted to contain less than 5ml of clear straw colored fluid.

CARDIOVASCULAR

The heart is of the normal configuration and weighs 420 grams. The epicardial surface contains a normal amount of glistening, yellow adipose tissue. The cardiac chambers are of proportionate capacity. The mural and valvular endocardia are smooth and glistening. The valves display no abnormalities. The papillary muscles and projecting myocardial muscle bundles are of normal prominence. The coronary ostia are in their usual location and give rise to normally distributed coronary arteries. Serial sectioning of the coronary arteries discloses multifocal grade II calcific atherosclerosis of the proximal left anterior descending coronary artery. On section, the firm, brown myocardium is of normal consistency. No focus of scar or acute hemorrhage is demonstrated.

The systemic aorta is of normal caliber and elasticity. The intimal surface is smooth and glistening. The ostia of the large branches are of normal distribution and dimension. Exploration and inspection of the large veins reveals no evidence of ante mortem clot.

RESPIRATORY

The lungs are of the usual lobation and weigh 690 and 600 grams, right and left respectively. Mild amounts of subpleural anthracotic pigment are present within all lobes. The pleurae are generally smooth and glistening. Dissection of the bronchial tree discloses a normal tan epithelium. The bronchial tree contains a moderate amount of aspirated gastric contents. The pulmonary vasculature is of normal distribution and dimension. The lining intima is glistening and smooth. It contains no ante mortem thrombi. Serial sectioning of the pulmonary parenchyma discloses the usual fine, lacy pulmonary architecture. No focus of consolidation, calcification or friability formation is demonstrated. The hilar lymph nodes are moderately anthracotic and non-calcified.

LIVER AND GALLBLADDER

The liver weighs 2290 grams. The hepatic capsule displays multifocal areas of adhesion. It is intact. Serial sectioning of the hepatic substance discloses homogeneous brown substance throughout without focal abnormal markings. The anterior surface of the

right lobe of the liver displays a focal irregular area of capsular thickening and white/yellow discoloration.

The gallbladder is not identified.

PANCREAS

The pancreas is in its usual location and on section is composed of normally lobulated, yellow/tan, soft substance. No focus of calcification is demonstrated.

ADRENALS

The adrenal glands are in their usual location and are of normal size and shape. On section, they are composed of smooth, yellow outer cortical rims, which overlie zones of deeper brown cortical and gray medullary substances.

GENITOURINARY

The kidneys are of similar size and shape. Together they weigh 460 grams. The capsules may be removed easily to reveal smooth, medium brown renal surfaces. On section, the cortices and medullae are well demarcated. The usual arcuate markings are preserved. No abnormality of the calyx, pelvis, cortex or medulla is demonstrated. The ureters are patent.

The bladder lumen contains approximately 30ml of clear, straw colored urine. The openings of the ureters into the bladder are normal. The bladder mucosa is light tan and finely wrinkled.

The prostate gland is of normal size and shape. On section, it is composed of firm, white, almost rubbery substance. No focus of nodularity or yellow discoloration is demonstrated.

SPLEEN

The spleen weighs 180 grams. The capsule is smooth, shiny and intact. On section, no focal abnormal markings are demonstrated. The usual follicular and trabecular markings are preserved.

ALIMENTARY

The smooth-walled esophagus is intact, of usual thickness and gray. Its mucosa is present in normal longitudinal folds. The cardioesophageal junction is easily identified.

The gastric wall is intact and of usual thickness. No abnormality of its serosal surface is demonstrated. The gastric mucosa is present in its normal rugal pattern. The stomach contains approximately 400ml of thick, semi-liquid, partially digested food substance including apparent fragments of bread, tomato and lettuce. The pylorus and duodenum display no abnormality. The small and large intestines are not remarkable.

MUSCULOSKELETAL

Examination and palpation of the spine, ribs, shoulder girdle and pelvis fails to reveal fracture.

NECK

There is no soft tissue hemorrhage within the neck. The hyoid bone and thyroid cartilages are intact. The larynx and trachea are of average caliber and are patent. They are lined with smooth, pale tan epithelium. The vocal cords display no abnormality.

The tongue displays no abnormality.

THYROID

The thyroid gland demonstrates no abnormality.

HEAD

There is no soft tissue hemorrhage within the scalp. The calvarium is intact and displays no abnormality. The dura is of normal tenseness. The superior sagittal sinus is patent and in the midline. The leptomeninges are glistening and translucent. The brain is of normal convolutional pattern and weighs 1500 grams.

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Multiple frontal sections of the brain at approximate levels of 2cm reveal normal relations of gray and white substance. No focal abnormal markings are demonstrated. The ventricles contain clear fluid and the lining ependyma is smooth and glistening. The choroid plexuses display no abnormality. The basal ganglia are normal.

Multiple horizontal sections of the cerebellum, pons and medulla reveal normal architecture of these structures without focal abnormal markings.

Examination of the base of the skull, after removal of the brain and dura, fails to reveal fracture.

CABINET FOR HUMAN RESOURCES
Department for Public Health, Division of Laboratory Services
100 Sower Blvd, Suite 204 Frankfort, Kentucky 40621
Samuel B. Gregorio, Dr.P.H., Acting Director (502)564-4446

****

Name: HARPER, EDWARD L. Medrec#: 1999TM1040
Age: Sex: Race:
Occupation:

Submitter: KYLE DUNN
LYON COUNTY CORONER
PO BOX 511
EDDYVILLE
KY 42038

Sub. County: LYON
Miscellaneous Information:
ML99-346
ESTIMATED COMPLETION TIME: 30
U.S. MAIL - SEALED
SEALED SECURITAINER

Copy 1:
Copy 2: TRACEY COREY HANDY MD

Remarks:
Collected: Received: 28-MAY-1999 1245 Clerk: MKW
Lab ID#: 1999TM1040 -79494
Purpose:
Specimen: BLOOD-RIGHT AXILLA BLOOD-RIGHT AXI

LABORATORY REPORT

Flag	Test (Method)	Results (*=New Result)	Therapeutic Ranges	Units
		*** TOXICOLOGY ***		
	ACETAMINOPHEN(EPIA)	NEGATIVE*		0-20 MG/L
	SALICYLATES (EPIA)	NEGATIVE*		20-250 MG/L
	ADDITIONAL RESULTS:	THIOPENTAL 3 MG/L BY EPIA*		
	MISCELLANEOUS TOX:	PANCURONIUM (VISIBLE SPECTROSCOPY) 10MG/L*		

F-12

Michael K. Ward

Department for Public Health, Division of Laboratory Services
100 Sower Blvd, Suite 204 Frankfort, Kentucky 40621
Samuel B. Gregorio, Dr.P.H., Acting Director (502)564-4446

****

Name: HARPER, EDWARD L. Medrec#: 1999TM1040
Age: Sex: Race:
Occupation:

Submitter: KYLE DUNN
LYON COUNTY CORONER
PO BOX 511
EDDYVILLE
KY 42038

Sub. County: LYON
Miscellaneous Information:
MC99-346
ESTIMATED COMPLETION TIME: 30
U.S. MAIL - SEALED.
SEALED SECURITAINER

Copy 1:
Copy 2: TRACEY COREY HANDY MD

Remarks:
Collected: Received: 28-MAY-1999 1244 Clerk: MKW
Lab ID#: 1999TM1040 -79607
Purpose:
Specimen: BLOOD-VENA CAVA BLOOD-VENA CAVA

LABORATORY REPORT

Flag	Test (Method)	Results (*=New Result)	Therapeutic Ranges	Units
		*** TOXICOLOGY ***		
	ACETAMINOPHEN(FPIA)	NEGATIVE*		
	SALICYLATES (FPIA)	NEGATIVE*	20-250	MG/L
	ADDITIONAL RESULTS:	THIOPENTAL 3 MG/L BY FPIA*		
	MISCELLANEOUS TOX:	PANCURONIUM (VISIBLE SPECTROSCOPY) 30MG/L*		

F-13

Michael K. Ward
MICHAEL K. WARD, FORENSIC SCI [illegible]

Department for Public Health, Division of Laboratory Services
100 Sower Blvd, Suite 204 Frankfort, Kentucky 40621
Samuel B. Gregorio, Dr.P.H., Acting Director (502)564-4446

****

Name: HARPER, EDWARD L. Medrec#: 1999TM1040
Age: Sex: Race:
Occupation:

Submitter: KYLE DUNN
LYON COUNTY CORONER
PO BOX 511
EDDYVILLE
KY 42038

Sub. County: LYON
Miscellaneous Information:
ME99-346
ESTIMATED COMPLETION TIME: 30
U.S. MAIL - SEALED
SEALED SECURITAINER

Copy 1:
Copy 2: TRACEY COREY HANDY MD

Remarks:
Collected:
Lab ID#: 1999TM1040 -77502
Received: 27-MAY-1999 1323 Clerk: MKW
Purpose:
Specimen: BLOOD-HEART

LABORATORY REPORT

BLOOD-HEART

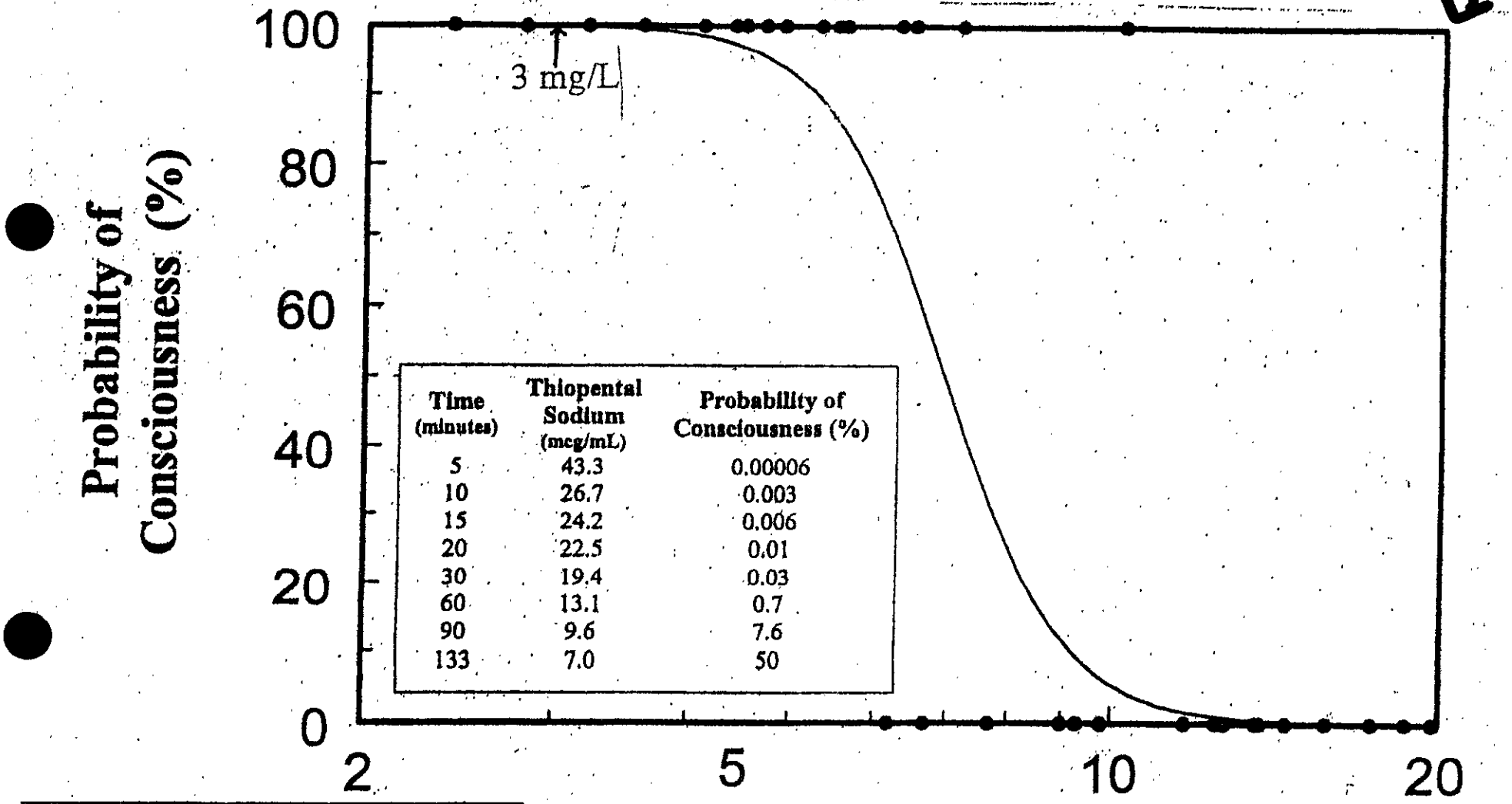
Flag	Test (Method)	Results (*=New Result)	Therapeutic Ranges	Units
		*** TOXICOLOGY ***		
	BA (EC)	NEGATIVE*	0.020-0.100	GM/100
	VOLATILES SCR. (GC)	NEGATIVE*		
	CONFIRMED (GC)	CHLORPHENIRAMINE 0.04*		MG/L
	ACETAMINOPHEN(FPIA)	NEGATIVE*	0-20	MG/L
	SALICYLATES (FPIA)	NEGATIVE*	20-250	MG/L
	ADDITIONAL RESULTS:	THIOPENTAL 6.5 MG/L BY FPIA*		
	MISCELLANEOUS TOX:	PANCURONIUM (VISIBLE SPECTROSCOPY) 39MG/L*		

F-14

Michael K. Ward
MICHAEL K. WARD, FORENSIC SCI. ASSC

TOXICOLOGY REPORT OF EDWARD LEE HARPER
POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL IN THE RIGHT AXILLARY VEIN AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D

51-7

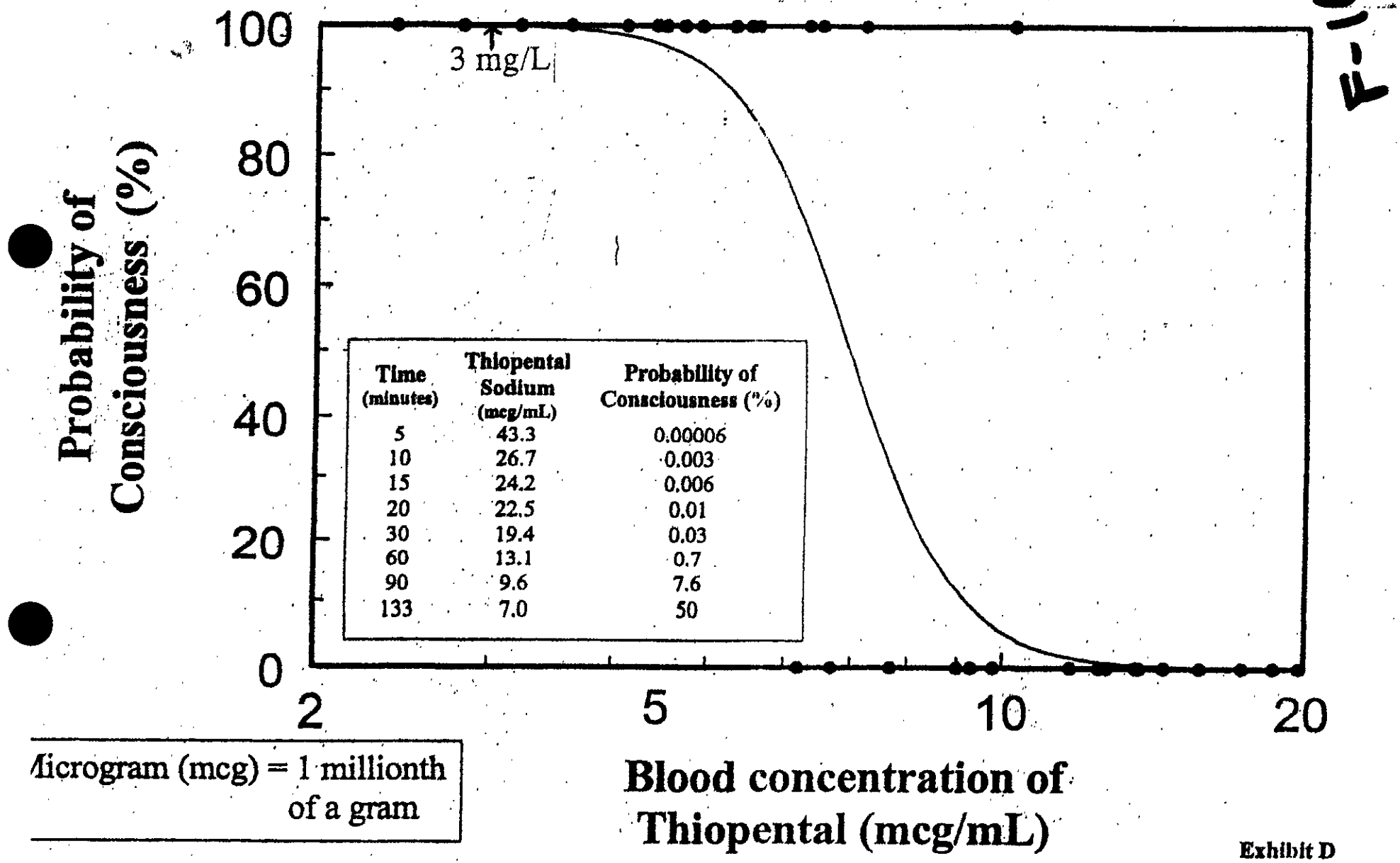


Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

Microgram (mcg) = 1 millionth of a gram

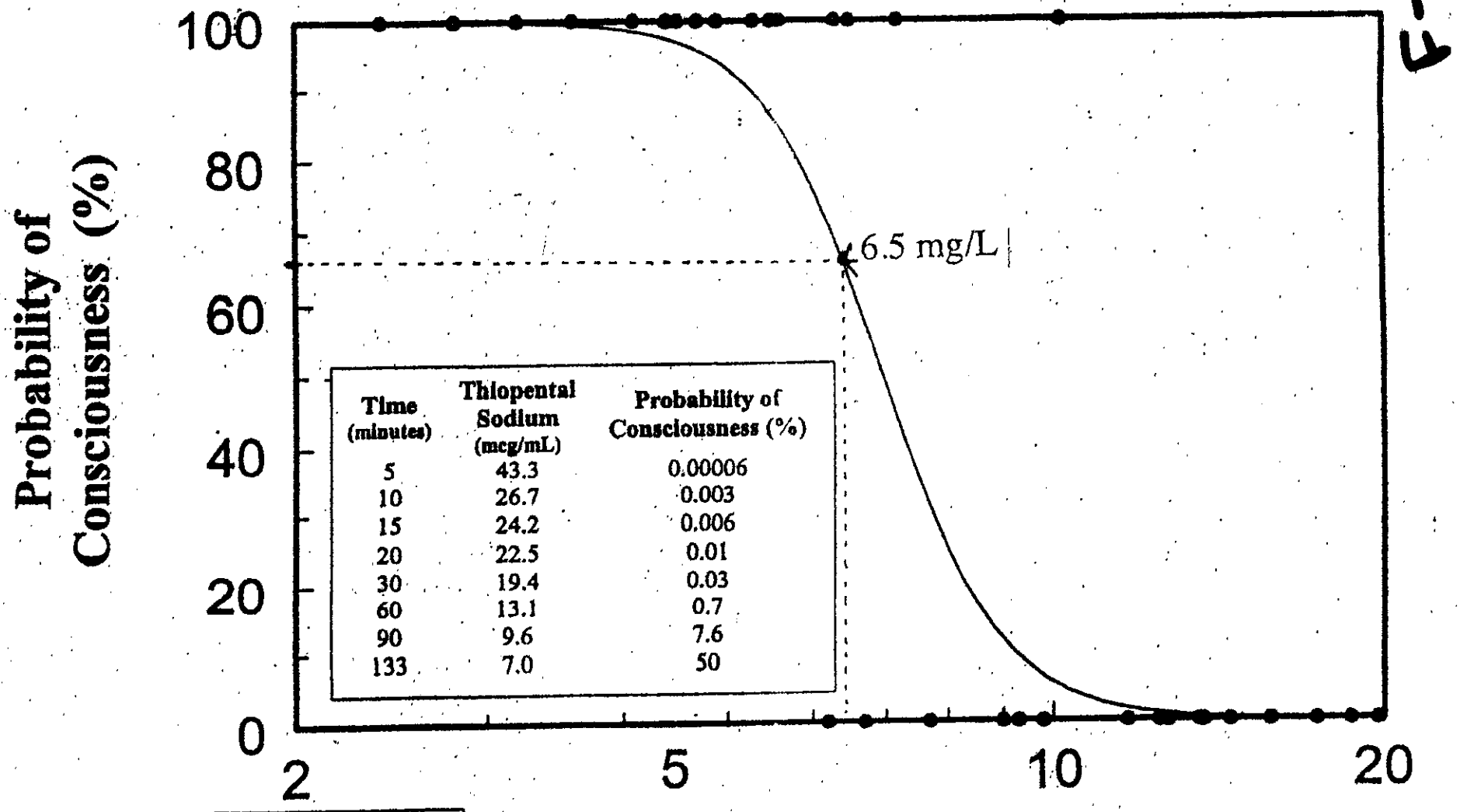
Exhibit D

POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL IN THE VENA CAVA AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

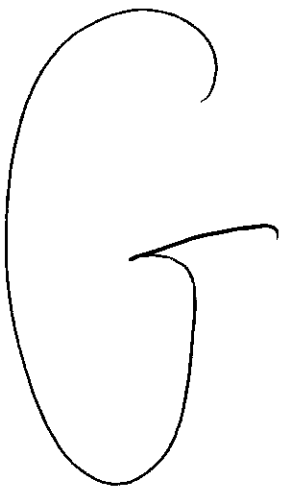
POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL IN THE HEART BLOOD AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

Microgram (mcg) = 1 millionth of a gram

Exhibit D



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
Department of Corrections
Office of General Counsel
2439 LAWRENCEBURG ROAD
P.O. BOX 2400
FRANKFORT, KENTUCKY 40602-2400
(502) 564-2024
FAX: (502) 564-6494

VERTNER L. TAYLOR
COMMISSIONER

May 14, 2002

Thomas M. Ransdell, Esq.
Asst. Public Advocate
100 Fair Oaks Lane, Suite 302
Frankfort, Kentucky 40601

RE: Execution Open Records

Dear Mr. Ransdell,

Enclosed is our Corrections Policy and Procedure 9.5 that addresses executions in Kentucky. [501 KAR 6:020, CPP 9.5] We also have some records at the Kentucky State Penitentiary that are "open" with only a few reservations regarding times when inmates might be subjected to special rules and procedures at the time of a prisoner being executed. I list the following information from our Deputy Commissioner which will hopefully satisfy your inquiries:

1. A therapeutic dose of Valium is given prior to the execution.

2. The names, amounts and the order in which an inmate is given of lethal injection drugs are as follows:

a.	Sodium Thiopental	2 gm
b.	Saline	20 ml
c.	Pavulon	50 mg
d.	Saline	20 ml
e.	Potassium Chloride	240 meq

The drugs are injected in rapid succession "a." through "e."

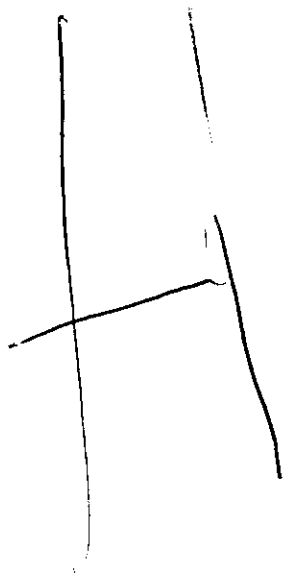
3. A minimum of one needle is inserted in the inmate. Additional needles may be used if considered necessary by the execution team.

Very Truly Yours,

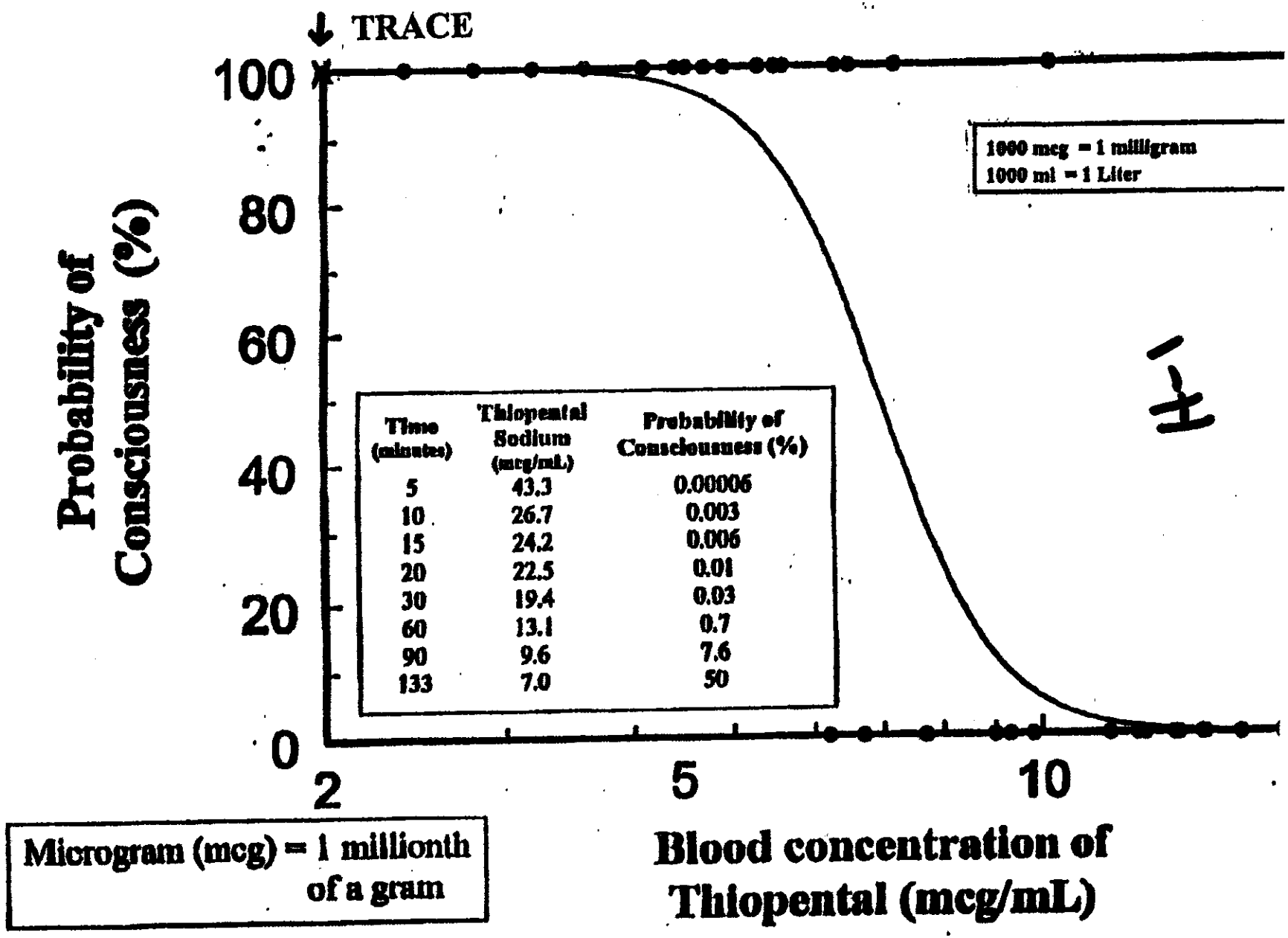
John T. Damron
Deputy General Counsel

JTD/j

Cc: Dep. Commissioner Bill Whitney
Warden Phil Parker



TOXICOLOGY REPORT OF DESMOND KEITH CARTER'S POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

Microgram (mcg) = 1 millionth of a gram

17

T O X I C O L O G Y R E P O R T

Office of the Chief Medical Examiner
Chapel Hill, NC 27599-7580

Toxicology Folder: T200208208
Case Folder: F200210591
Date of Report: 24-jan-2003

Case Folder
F2002-10591

DECEDENT: Desmond Keith Carter

Status of Report: Approved
Report Electronically Approved By: Ruth Winecker, Ph.D.

* * *

SPECIMENS received from Gordon B. LeGrand on 13-dec-2002

S020014237: 19.0 ml Blood
SOURCE: Femoral Vessel

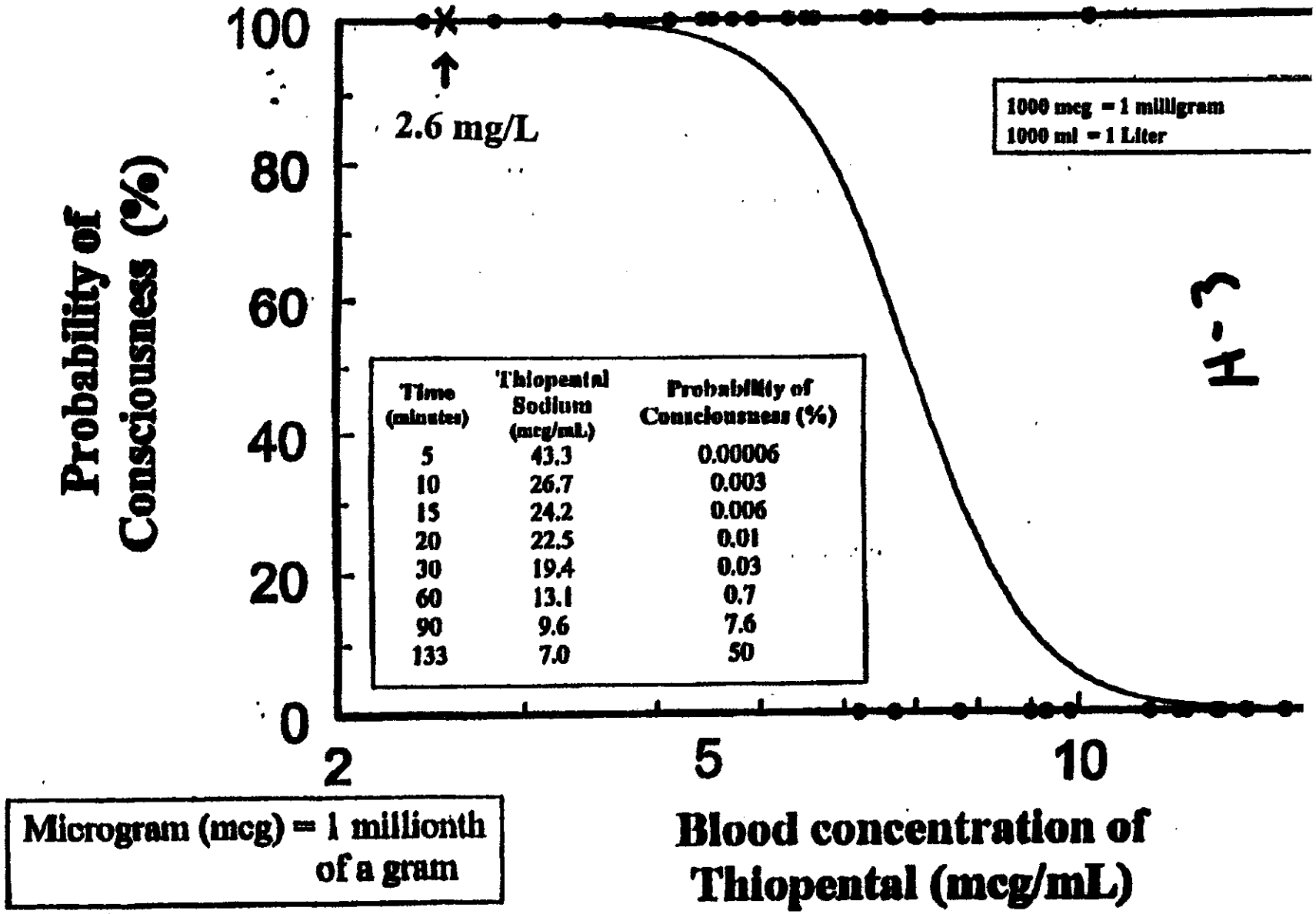
CONDITION: Postmortem
OBTAINED: 10-dec-2002

Butalbital	Trace	01/24/200
Ethanol	None Detected	01/24/200
Organic Neutrals	None Detected	01/24/200
Other Organic Acids	None Detected	01/24/200
Pentobarbital	Trace	01/24/200
Thiopental	Trace	01/24/200

012703 06:31 * * * E N D O F R E P O R T * * *

1-2

TOXICOLOGY REPORT OF ARTHUR MARTIN BOYD'S POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

T O X I C O L O G Y R E P O R T

Office of the Chief Medical Examiner
Chapel Hill, NC 27599-7580

Toxicology Folder: T199906230
Case Folder: F199907998
Date of Report: 30-nov-1999
Page: 1

DECEDENT: Arthur Martin Boyd, Jr.
Case Folder
F1999-07998

Status of Report: Approved
Report Electronically Approved By: Ruth Winecker, Ph.D.

* * *

SPECIMENS received from James R. Edwards on 22-oct-1999

S9900010861: 20.0 ml Blood
SOURCE: Femoral Vessel

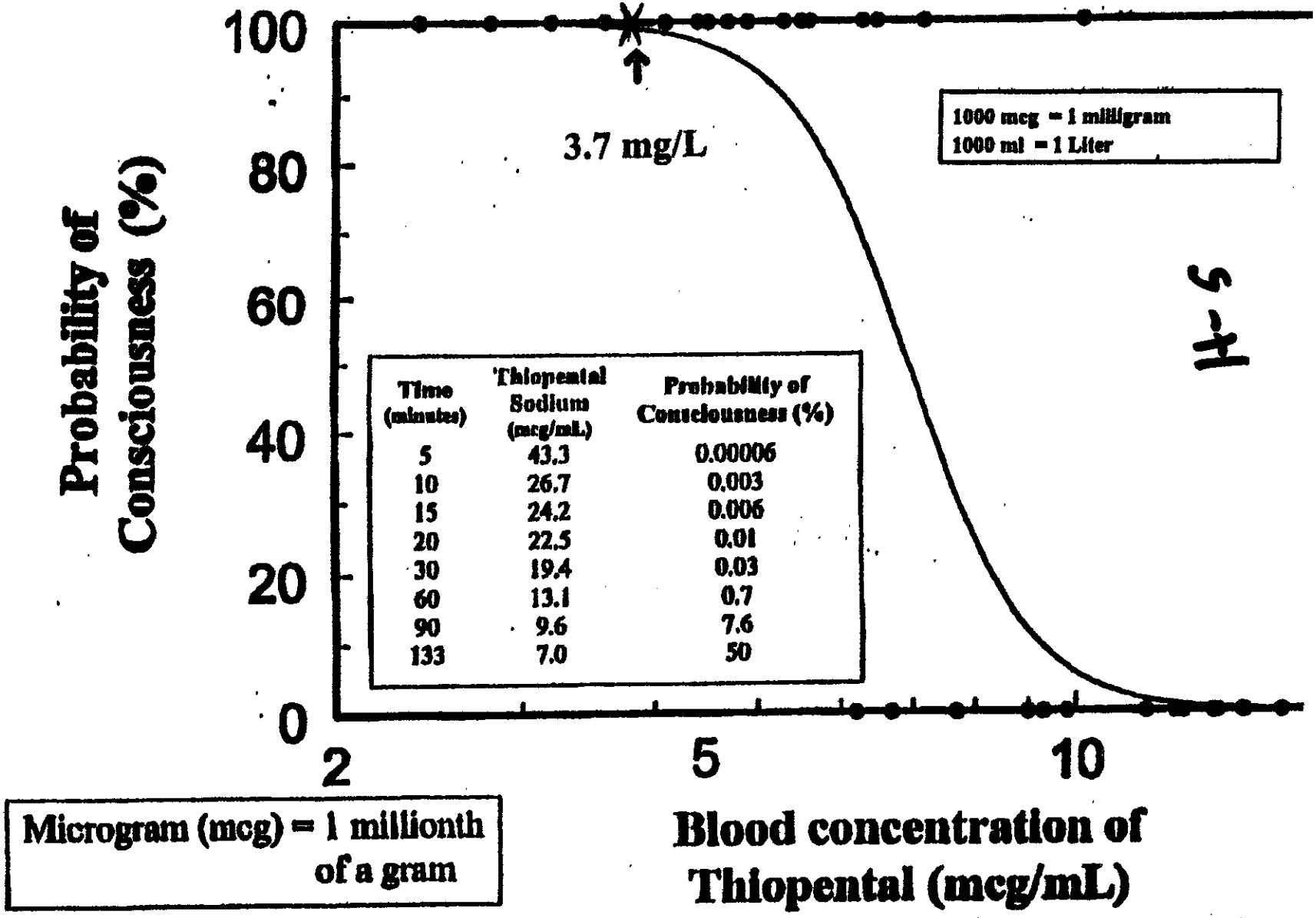
CONDITION: Postmortem
OBTAINED: 21-oct-1999

Ethanol	None Detected			11/30/1999
Organic Neutrals	None Detected			11/30/1999
Other Organic Acids	None Detected			11/30/1999
Thiopental		2.6	mg/L	11/30/1999

113099 16:16 * * * E N D O F R E P O R T * * *

H-4

TOXICOLOGY REPORT OF MICHAEL EARL SEXTON'S POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

H-5

T O X I C O L O G Y R E P O R T

Office of the Chief Medical Examiner
Chapel Hill, NC 27599-7580

Toxicology Folder: T200007095
Case Folder: F200009025
Date of Report: 21-dec-2000

Case Folder
F2000-09025

INCIDENT: Michael Earl Sexton

Status of Report: Approved
Report Electronically Approved By: Ruth Winecker, Ph.D.

* * *

SPECIMENS received from James R. Edwards on 13-nov-2000

S000012606: 20.0 ml Blood
SOURCE: Vena Cava

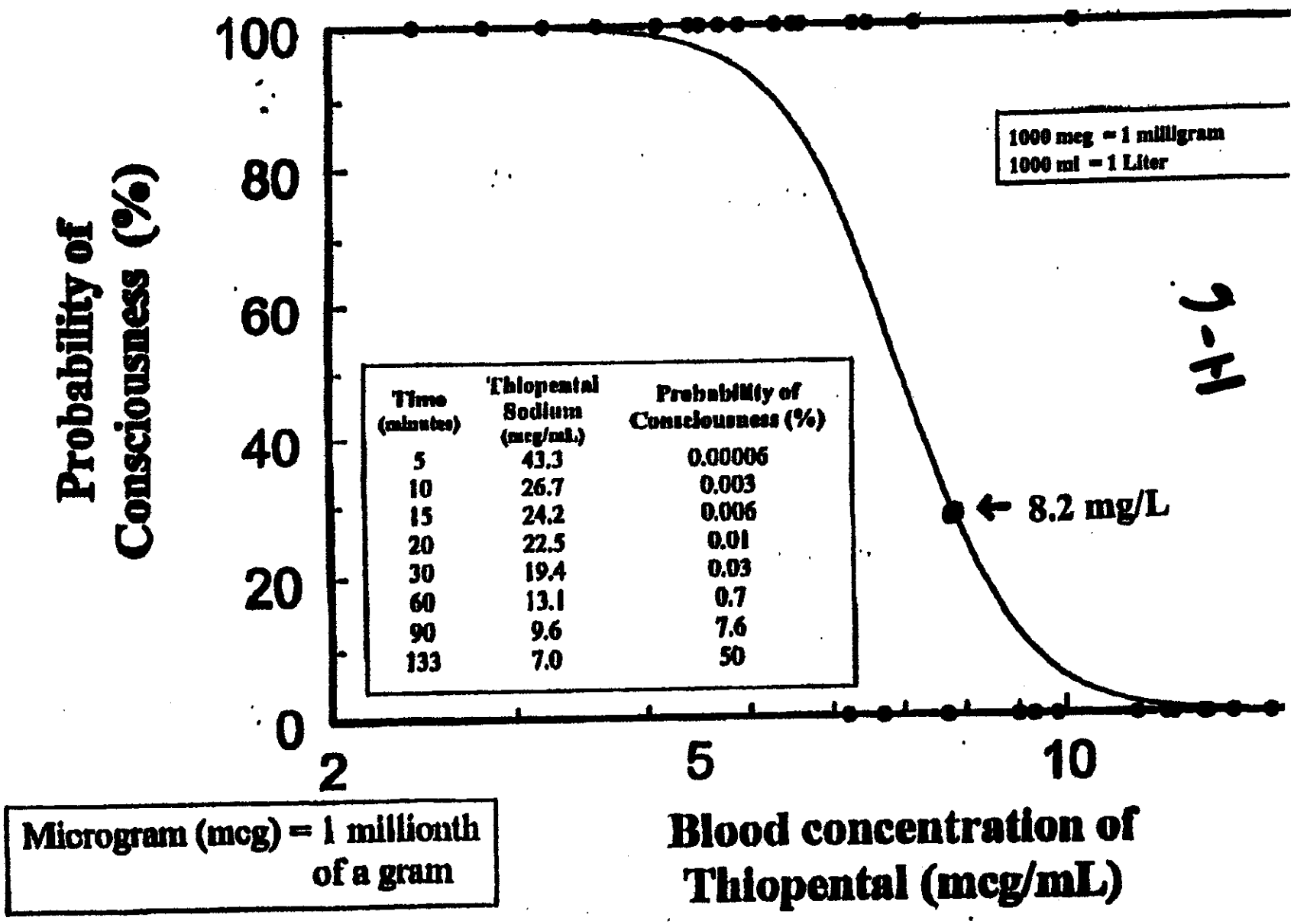
CONDITION: Postmortem
OBTAINED: 09-nov-2000

Ethanol	None Detected			12/21/2000
Organic Neutrals	None Detected			12/21/2000
Other Organic Acids	None Detected			12/21/2000
Pentobarbital	Trace			12/21/2000
Thiopental	3.7	ug/L		12/21/2000

122100 16:16 * * * E N D O F R E P O R T * * *

H-5A

TOXICOLOGY REPORT OF RONALD WAYNE FRYE'S POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

9-11

TOXICOLOGY REPORT

Office of the Chief Medical Examiner
Chapel Hill, NC 27599-7580

Toxicology Folder: T200105545
Case Folder: F200107199
Date of Report: 26-sep-2001

Case Folder
F2001-07199

DECEDENT: Ronald Wayne Frye

Status of Report: Approved
Report Electronically Approved By: Ruth Winecker, Ph.D.

* * *

SPECIMENS received from Dana D. Copeland on 05-sep-2001

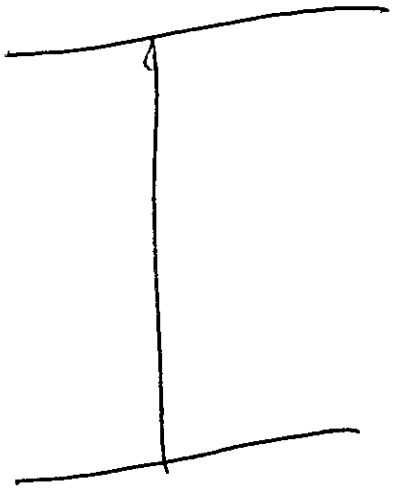
S010010597: 20.0 ml Blood
SOURCE: Subclavian Vessel

CONDITION: Postmortem
OBTAINED: 31-aug-2001

Ethanol	None Detected			09/26/200
Organic Neutrals	None Detected			09/26/200
Other Organic Acids	None Detected			09/26/200
Pentobarbital	Trace			09/26/200
Thiopental		8.2	mg/L	09/26/200

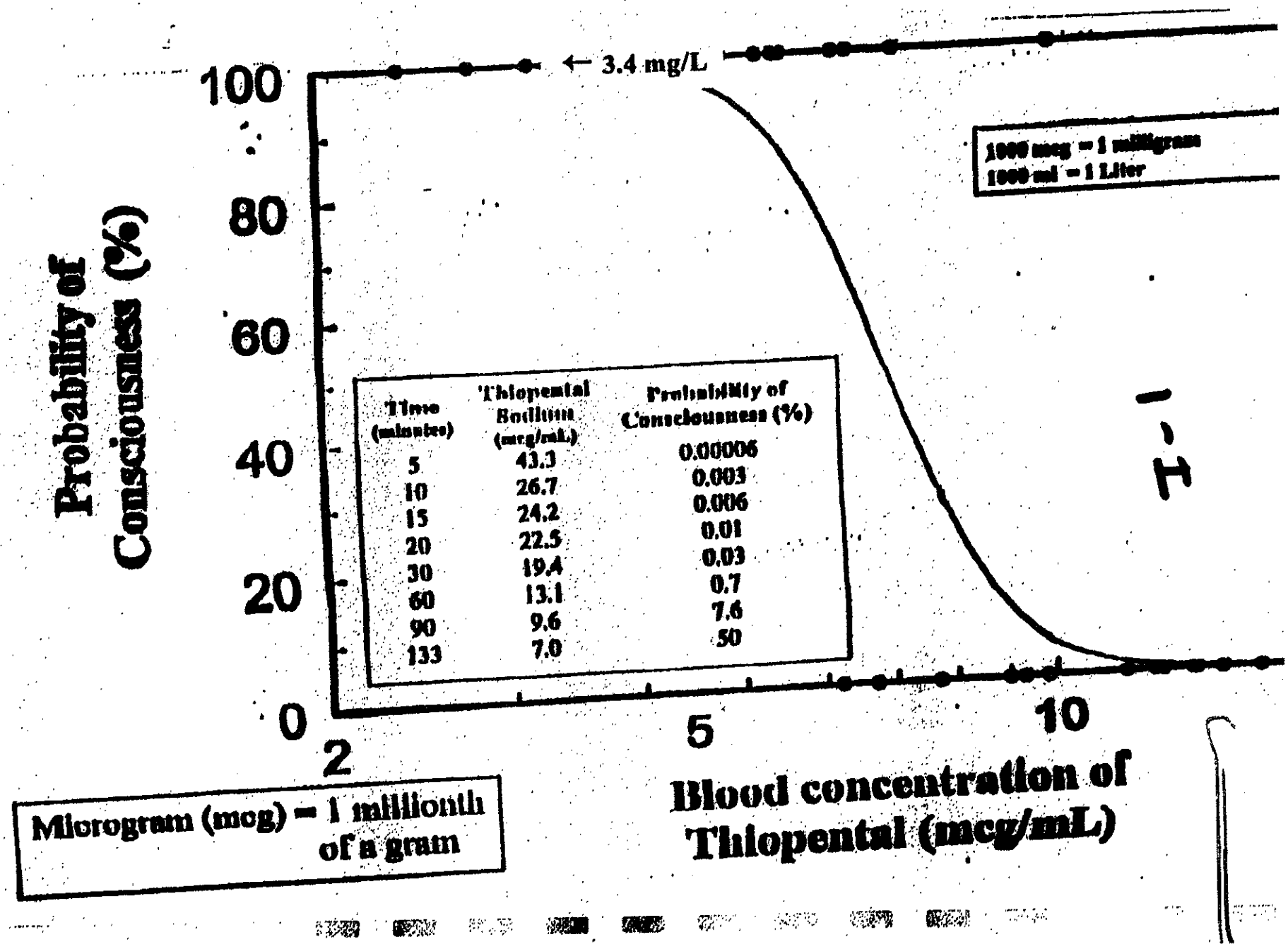
092601 16:20 * * * END OF REPORT * * *

H-7



TOXICOLOGY REPORT OF KEVIN [illegible]

POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



SOUTH CAROLINA LAW ENFORCEMENT DIVISION
FORENSIC SERVICES LABORATORY REPORT

JIM HODGES
GOVERNOR

ROBERT M. STEWART
CHIEF

TOXICOLOGY DEPARTMENT

February 5, 2001
SLED Lab No: L0012762
Your Case No: Not Listed
Incident Date: 11-04-01
(V) Kevin Dean Young

Coroner Gary M. Watts
Richland County Coroner's Office
P O Box 192
Columbia, SC 29202

This is an official report of the South Carolina Law Enforcement Division Forensic Services Laboratory and is to be us
connection with an official criminal investigation. These examinations were conducted under your assurance that no pre
examinations of person(s) or evidence submitted in this case have been or will be conducted by any other laboratory or age

Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item: Blood labeled "Kevin Young FA00-516"

RESULTS:

Negative blood alcohol found (blood alcohol less than 0.01%).

3.4 mg/L Thiopental found in blood.

Less than 0.5 mg/L Pentobarbital found in blood.

Negative for Benzodiazepines in blood by liquid chromatography/mass spectrometry.

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)

I-2

A comprehensive drug screen utilizing Gas Chromatography/Mass Spectrometry was performed on this sample. With the exception of the compound(s) noted above, no other poisons or drugs of concern were found in this sample.

Item: Urine

RESULTS:

Negative for ethanol in urine.

Item: Ocular Fluid

RESULTS:

Negative for ethanol in ocular fluid.

Item: Brain

RESULTS:

No analysis performed.

Item: Liver

RESULTS:

No analysis performed.

Item: Gastric

RESULTS:

No analysis performed.

Item: Bile

RESULTS:

No analysis performed.

Forensic Toxicologist

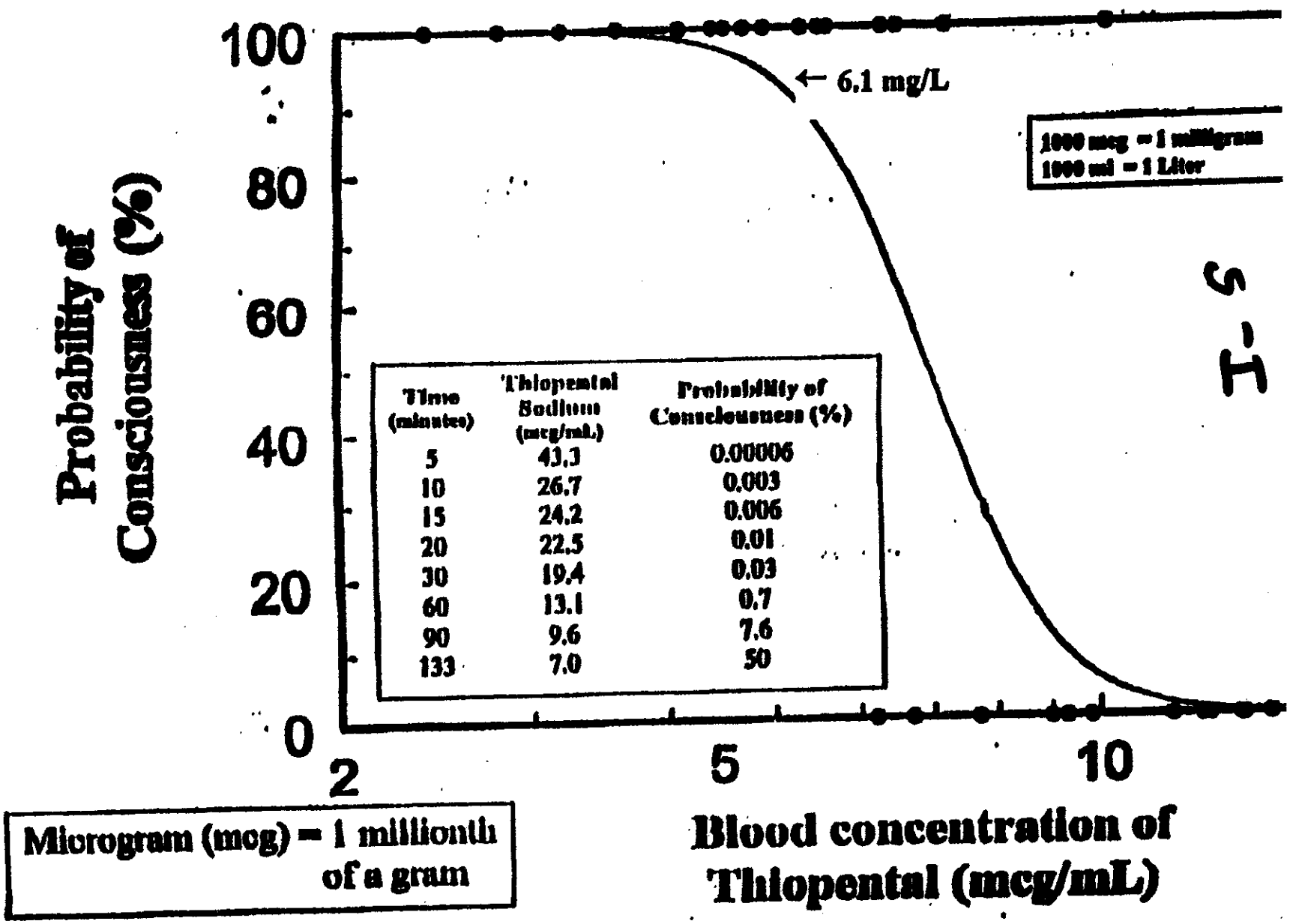
Wendy C. Bell

WCB/lcp

Cc: Dr. Joel Sexton, Newberry Pathology Association

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of analyses and then destroyed unless otherwise notified.

TOXICOLOGY REPORT OF MICHAEL PASSARO
POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

Microgram (mcg) = 1 millionth of a gram

S-1

SOUTH CAROLINA LAW ENFORCEMENT DIVISION
FORENSIC SERVICES LABORATORY REPORT

JIM HODGES
GOVERNOR

ROBERT M. STEWART
CHIEF

COPY

TOXICOLOGY DEPARTMENT

December 3, 2002
SLED Lab No: L02-11110
Your Case No: Not Listed
Incident Date: 09/13/02
(V) Passaro, Michael J.

Coroner Gary M. Watts
Richland County Coroner's Office
P.O. Box 192
Columbia, SC 29202

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Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item 1: Blood labeled "Michael Passaro FA02-524"

RESULTS:

Negative for Ethanol in blood (less than 0.01 % w/v).

Less than 0.10 mg/L Diazepam found in blood.

0.59 mg/L Pentobarbital found in blood.

6.1 mg/L Thiopental found in blood.

1.8 mg/L Hydroxyzine found in blood.

0.49 mg/L Fluoxetine found in blood.

I-6

Negative screen for Cocaine and/or Cocaine metabolites.
(Cocaine, Benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.1 mg/L.

Negative screen for Opiates.
(Morphine, Codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L.

A comprehensive drug screen utilizing Gas Chromatography/Mass Spectrometry was performed on this sample. With the exception of the compound(s) listed above, no other poisons or drugs of concern were found in this sample.

Item 2: Ocular fluid

RESULTS:

Negative for Ethanol in ocular fluid.

Item 3: Bile

RESULTS:

No analysis performed.

Item 4: Liver

RESULTS:

No analysis performed.

Item 5: Brain

RESULTS:

No analysis performed.

I-7

Forensic Toxicologist

Dustin Wilson Smith

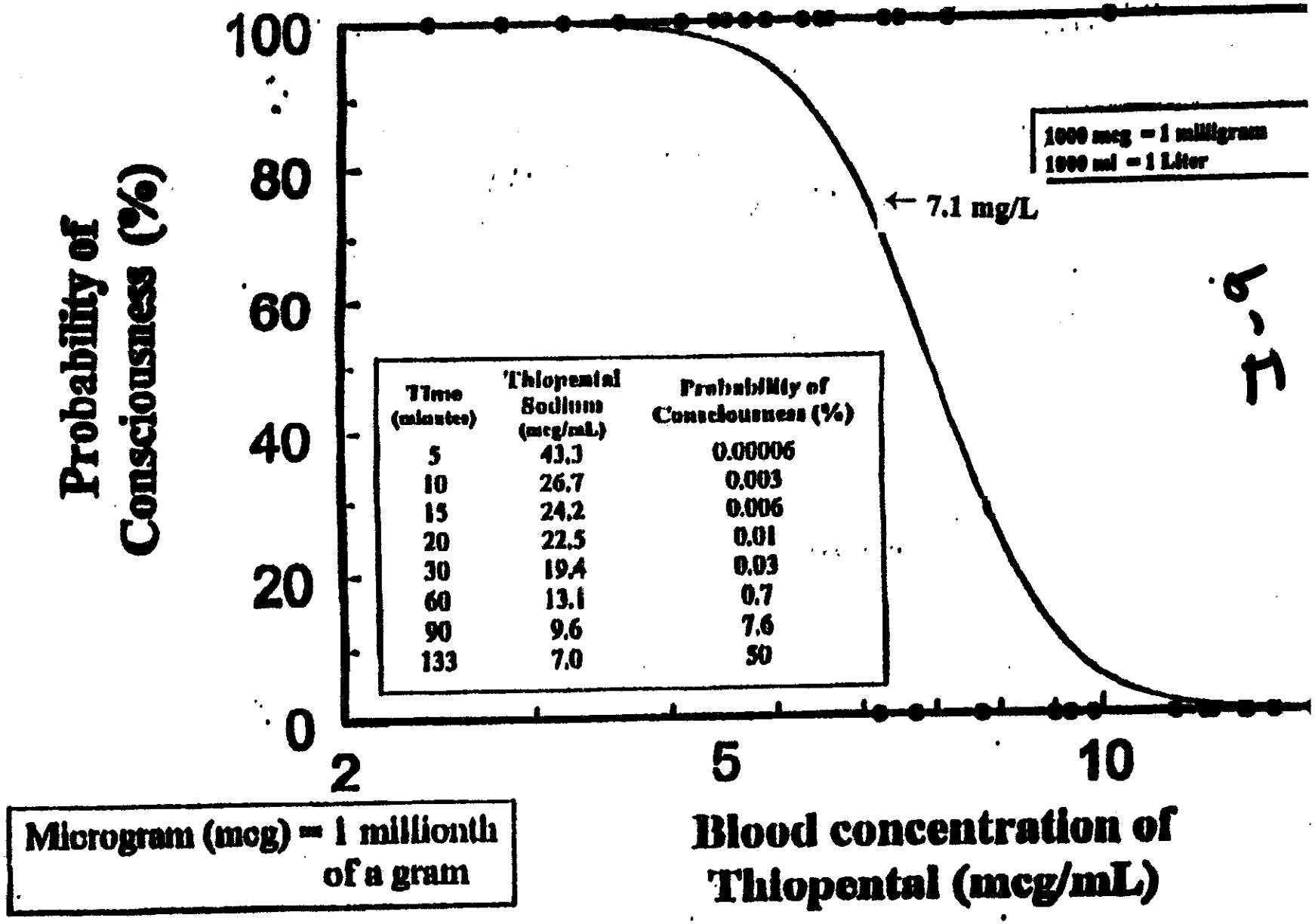
DWS/dlj

Cc: Dr. Ross/Newberry Pathology Associates

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of the analysis and then destroyed unless otherwise notified.

TOXICOLOGY REPORT OF LARRY GILBERT

POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

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SOUTH CAROLINA LAW ENFORCEMENT DIVISION

FORENSIC SERVICES LABORATORY REPORT

JIM H. HODGES
GOVERNOR

COPY

ROBERT M. STEWART
CHIEF

TOXICOLOGY DEPARTMENT

March 2, 2000
SLED Lab No: L9814682
Your Case No: Not Listed
Incident Date: 12/04/98
(V) Larry Gilbert

Coroner Frank Barron
Richland County Coroner's Office
P O Box 192
Columbia, SC 29202

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Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item: Blood labeled "Larry Gilbert FA98-566"

RESULTS:

Negative blood alcohol found (blood alcohol less than 0.01%).

7.1 mg/L Thiopental found in blood.

2.0 mg/L Pentobarbital found in blood.

Negative for Benzodiazepines by Liquid Chromatography/ Mass Spectrometry.

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.3 mg/L.

Negative screen for Opiates.
(Morphine, codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L.

I-10

Negative screen for Tricyclic Antidepressants.
(Imipramine, amitriptyline, et al.)
Urine threshold 0.075 mg/L; blood threshold 0.075 mg/L.

Item: Urine

RESULTS:

Negative for ethanol in urine.

Negative screen for Benzodiazepines.
(Oxazepam, nordiazepam, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.05 mg/L.

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.3 mg/L.

Negative screen for Opiates.
(Morphine, codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L.

Negative screen for Tricyclic Antidepressants.
(Imipramine, amitriptyline, et al.)
Urine threshold 0.075 mg/L; blood threshold 0.075 mg/L.

Item: Ocular Fluid

RESULTS:

Negative for ethanol in ocular fluid.

Item: Brain

RESULTS:

No analysis performed.

Item: Liver

RESULTS:

No analysis performed.

Item: Gastric

RESULTS:

No analysis performed.

Item: Bile

RESULTS:

No analysis performed.

Forensic Toxicologist

Samuel C. Reighley, Jr.

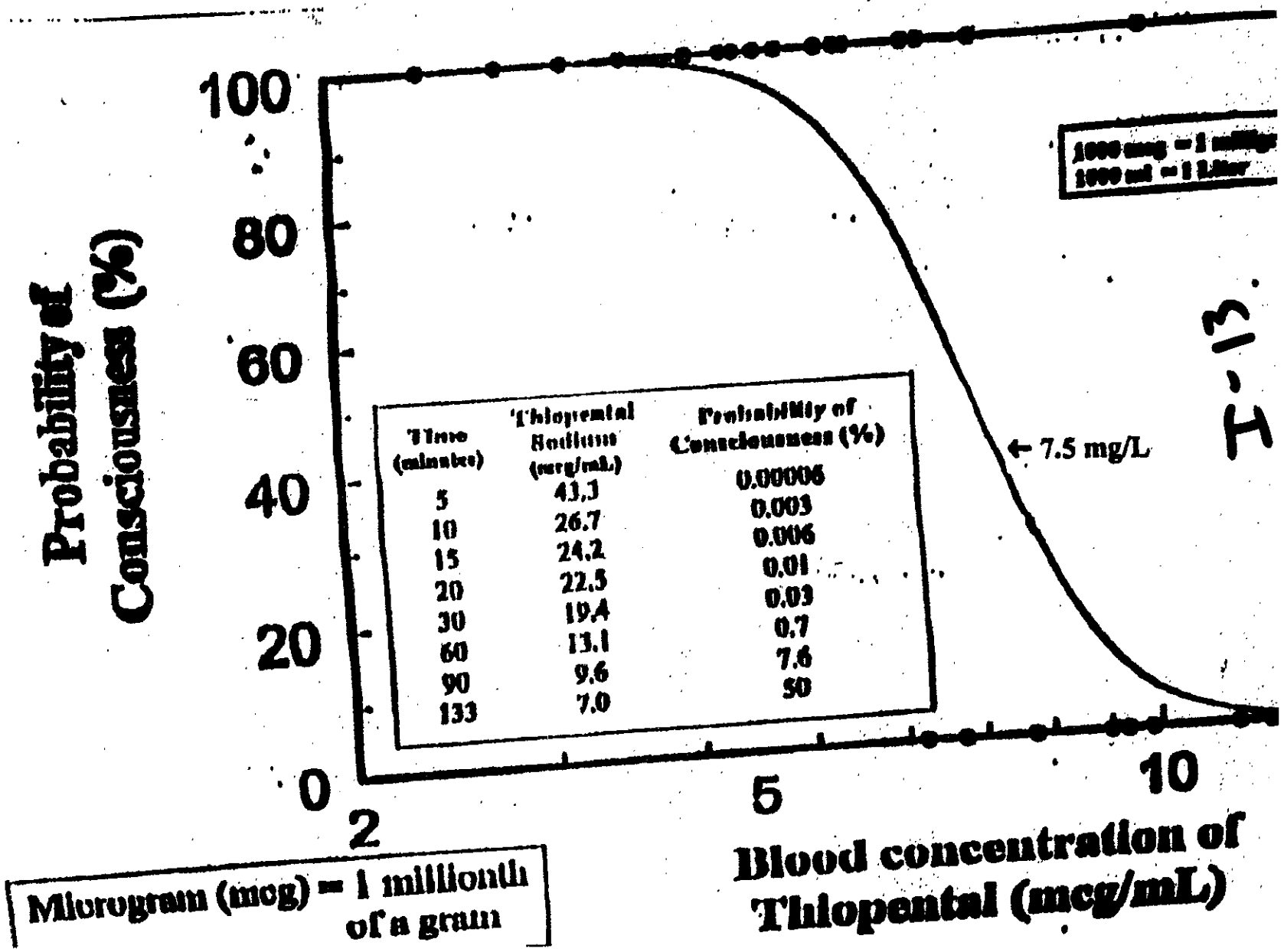
SCR/dhb

Cc: Dr. Inas Yacoub, Pathologist

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of analyses and then destroyed unless otherwise notified.

I-12

TOXICOLOGY REPORT OF LOUIS TRUESDALE
POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
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20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

SOUTH CAROLINA LAW ENFORCEMENT DIVISION

FORENSIC SERVICES LABORATORY REPORT

JIM H. HODGES
GOVERNOR

ROBERT M. STEWART
CHIEF

COPY

TOXICOLOGY DEPARTMENT

June 26, 2000
SLED Lab No: L9814954
Your Case No: Not Listed
Incident Date: 12-11-98
(V) Louis Truesdale Jr.

Coroner Frank E. Barron
Richland County Coroner's Office
P O Box 192
Columbia, SC 29202

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Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item: Blood labeled "Louis Truesdale Jr. FA98-579"

RESULTS:

Negative blood alcohol found (blood alcohol less than 0.01%).

0.12 mg/L Diazepam found in blood.

0.88 mg/L Butalbital found in blood.

9.7 mg/L Pentobarbital found in blood.

7.5 mg/L Thiopental found in blood.

0.16 mg/L Chlorpheniramine found in blood.

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.3 mg/L.

I-14

Negative screen for Opiates.
(Morphine, codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L.

Negative screen for Tricyclic Antidepressants.
(Imipramine, amitriptyline, et al.)
Urine threshold 0.075 mg/L; blood threshold 0.075 mg/L.

Item: Urine

RESULTS:

Negative for ethanol in urine.

Item: Ocular Fluid

RESULTS:

Negative for ethanol in ocular fluid.

Item: Brain

RESULTS:

No analysis performed.

Item: Liver

RESULTS:

No analysis performed.

Forensic Toxicologist

David H. Eagerton, Ph.D., DFTCB

DHE/kap

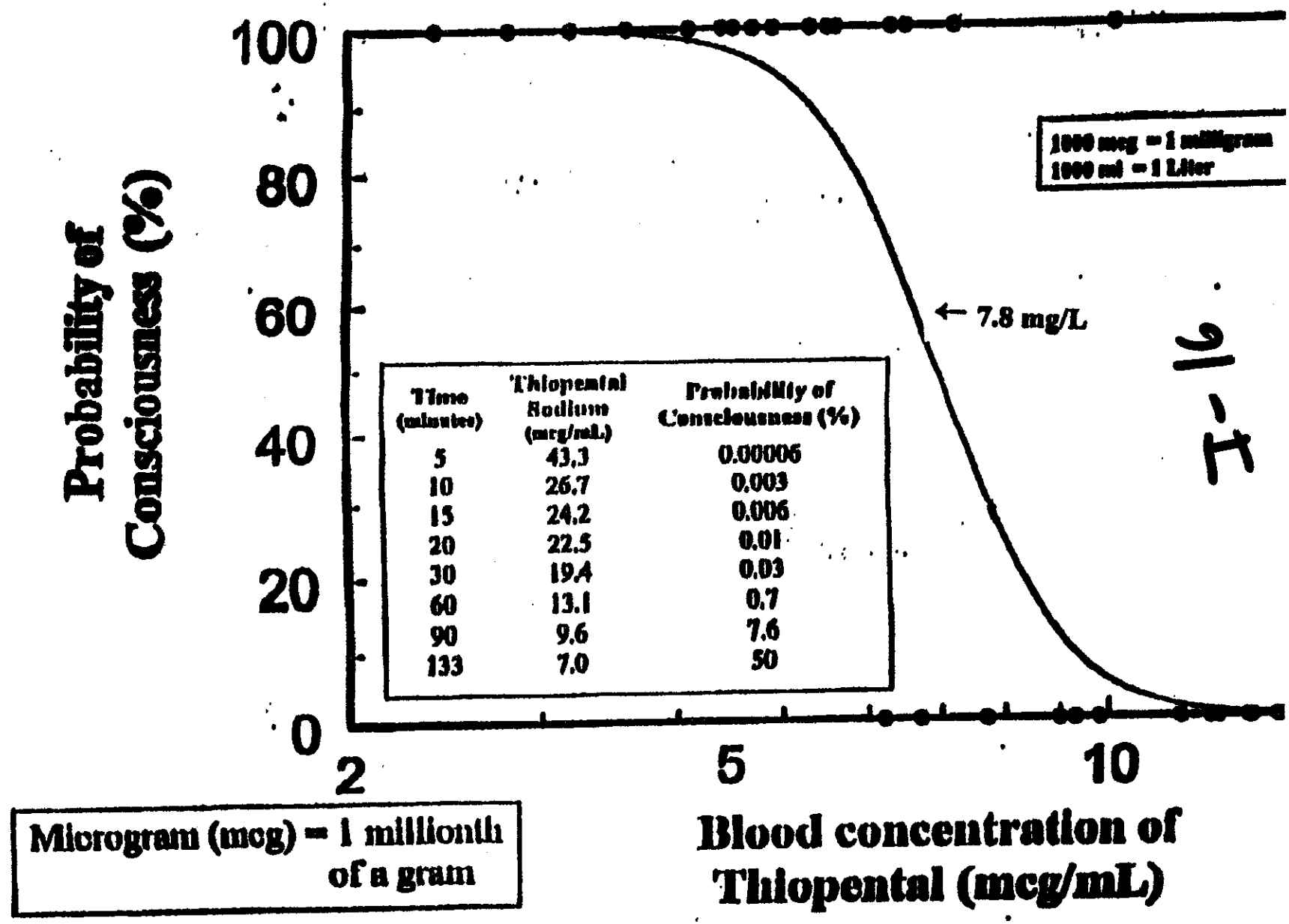
I-15

Cc: Dr. Joel Sexton, Pathologist

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of analyses and then destroyed unless otherwise notified.

TOXICOLOGY REPORT OF RICHARD JOHNSON

POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



91-I

SOUTH CAROLINA LAW ENFORCEMENT DIVISION
FORENSIC SERVICES LABORATORY REPORT

JIM HODGES
GOVERNOR

ROBERT M. STEWART
CHIEF

TOXICOLOGY DEPARTMENT

Coroner Gary M. Watts
Richland County Coroner's Office
P.O. Box 192
Columbia, SC 29202

August 6, 2002
SLED Lab No: L02-05574
Your Case No: Not Listed
Incident Date: 05/03/02
(V) Johnson, Richard Charles

COPY

This is an official report of the South Carolina Law Enforcement Division Forensic Services Laboratory and is to be used connection with an official criminal investigation. These examinations were conducted under your assurance that no previo examinations of person(s) or evidence submitted in this case have been or will be conducted by any other laboratory or agenc

Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item 1: Blood labeled "Richard C. Johnson FA02-250"

RESULTS:

Negative blood alcohol found (blood alcohol less than 0.01% w/v).

7.8 mg/L Thiopental found in blood.

Less than 1.0 mg/L Pentobarbital found in blood.

Less than 0.01 mg/L Diazepam found in blood.

0.04 mg/L Nordiazepam found in blood.

Negative screen for Cocaine and/or Cocaine metabolites.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L: blood threshold 0.1 mg/l

I-17

Negative screen for Opiates.
(Morphine, codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L.

A comprehensive drug screen utilizing gas chromatography/mass spectrometry was performed on this sample. With the exception of the compound(s) listed above, no other poisons or drugs of concern were found in this sample.

Item 2: Ocular fluid

RESULTS:

Negative for ethanol in ocular fluid.

Item 3: Gastric

RESULTS:

No analysis performed.

Item 4: Bile

RESULTS:

No analysis performed.

Item 5: Brain

RESULTS:

No analysis performed.

Item 6: Liver

RESULTS:

No analysis performed.

Forensic Toxicologist

Laurie J. Shacker

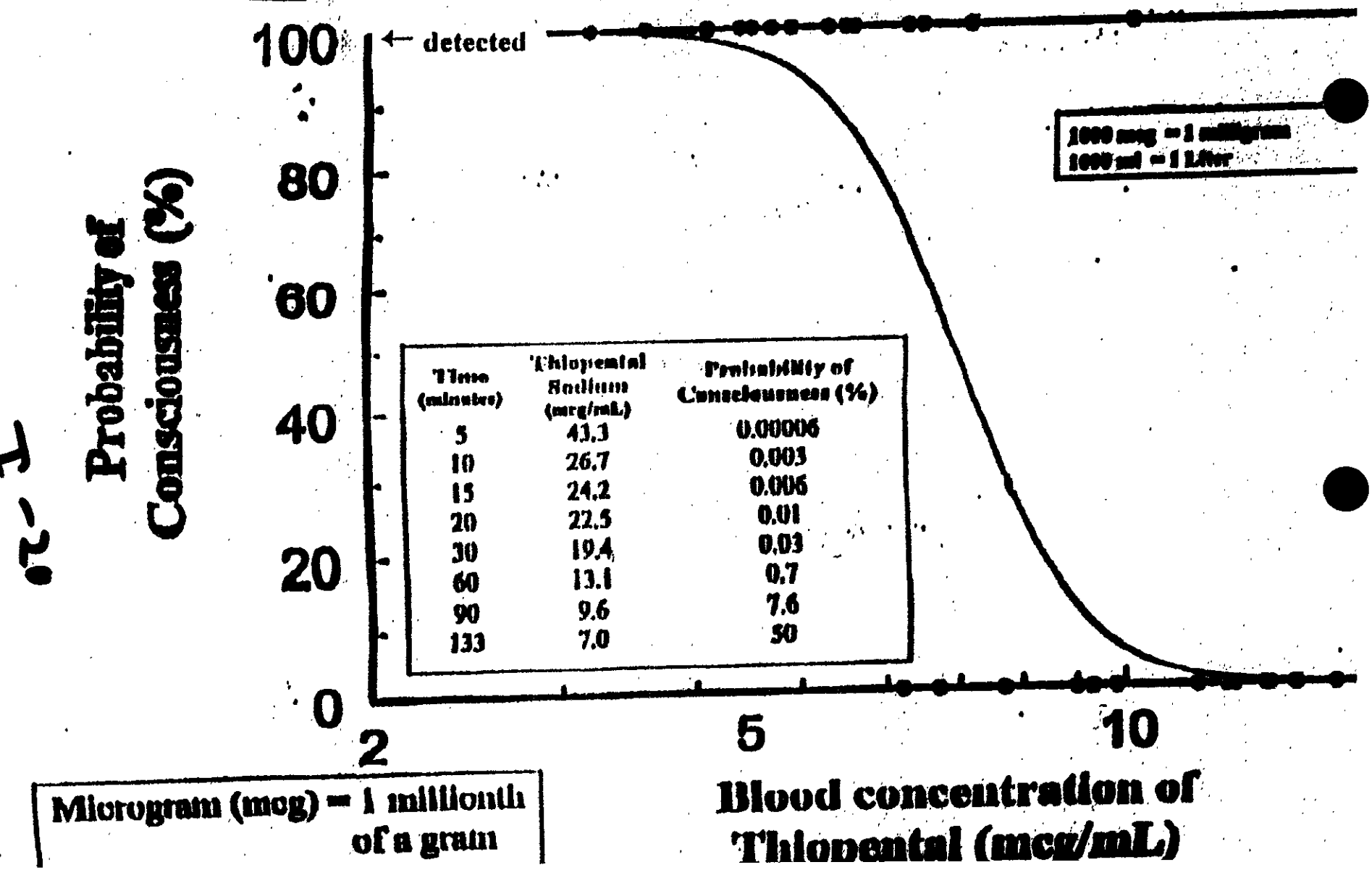
LJS/dlj

cc: Dr. Janice Ross/Newberry Pathology Associates

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of the analysis and then destroyed unless otherwise notified.

I-19

TOXICOLOGY REPORT OF RONNIE HOWARD
POSTMORTEM BLOOD CONCENTRATION OF THIOPENTAL AS
PLOTTED ON DR. DERSHWITZ'S EXHIBIT D



Time (minutes)	Thiopental Sodium (mcg/mL)	Probability of Consciousness (%)
5	43.3	0.00006
10	26.7	0.003
15	24.2	0.006
20	22.5	0.01
30	19.4	0.03
60	13.1	0.7
90	9.6	7.6
133	7.0	50

Microgram (mcg) = 1 millionth of a gram

SOUTH CAROLINA LAW ENFORCEMENT DIVISIO

FORENSIC SERVICES LABORATORY REPORT

JIM H. HODGES
GOVERNOR

COPY

ROBERT M. STEWART
CHIEF

TOXICOLOGY DEPARTMENT

Coroner Frank Barron
Richland County Coroner's Office
P O Box 192
Columbia, SC 29202

June 29, 2000
SLED Lab No: L9900341
Your Case No: Not Listed
Incident Date: 01-08-99
(V) Ronald Howard

This is an official report of the South Carolina Law Enforcement Division Forensic Services Laboratory and is to be use
connection with an official criminal investigation. These examinations were conducted under your assurance that no previ
examinations of person(s) or evidence submitted in this case have been or will be conducted by any other laboratory or agen

Robert M. Stewart, Chief
South Carolina Law Enforcement Division

ITEMS OF EVIDENCE:

Item: Blood labeled "Ronald Howard FA99-11"

RESULTS:

Negative blood alcohol found (blood alcohol less than 0.01%).

Thiopental found in blood. Sample unsuitable for quantitation.

Pentobarbital found in blood. Sample unsuitable for quantitation.

Negative screen for Benzodiazepines.
(Oxazepam, nordiazepam, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.05 mg/L

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.3 mg/L

I -21

Negative screen for Opiates.
(Morphine, codeine, et al.)

Negative screen for Tricyclic Antidepressants.
(Imipramine, amitriptyline, et al.)
Urine threshold 0.075 mg/L; blood threshold 0.075 mg/L

Negative screen for Phenobarbital.
Blood threshold 25 mg/L

Item: Urine

RESULTS:

Negative for ethanol in urine.

Thiopental found in urine.

Pentobarbital found in urine.

Negative screen for Benzodiazepines.
(Oxazepam, nordiazepam, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.05 mg/L

Negative screen for Cocaine and/or Cocaine metabolite.
(Cocaine, benzoylecgonine, et al.)
Urine threshold 0.3 mg/L; blood threshold 0.3 mg/L

Negative screen for Opiates.
(Morphine, codeine, et al.)
Urine threshold 0.2 mg/L; blood threshold 0.2 mg/L

Negative screen for Tricyclic Antidepressants.
(Imipramine, amitriptyline, et al.)
Urine threshold 0.075 mg/L; blood threshold 0.075 mg/L

Item: Ocular Fluid

RESULTS:

Negative for ethanol in ocular fluid.

Item: Brain

RESULTS:

No analysis performed.

I-22

Item: Liver

RESULTS:

No analysis performed.

Item: Bile

RESULTS:

No analysis performed.

Forensic Toxicologist

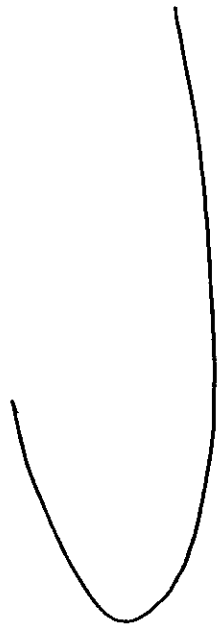
Samuel C. Reighley, Jr.

SCR/kap

Cc: Dr. Joel Sexton, Pathologist

Biological specimens processed for testing which are not consumed during analysis will be maintained for 180 days from the completion date of analyses and then destroyed unless otherwise notified.

I-23



A. I seen it twice. Sometime before the execution of Harris and after Harris's execution.

Q. The first time you examined that device, was it during an execution in Texas?

A. The first time?

Q. Yes.

A. No, it was not.

Q. During the time you examined the electric chairs, were they during an execution?

A. No.

Q. Was it prior to an execution?

A. They were prior to executions or there was no execution in place or executions were stayed or something like that.

Q. What had caused you the occasion to examine the electric chairs in Florida and Georgia?

A. What I was doing was studying the management of Death Row inmates. It was on a National Institute of Corrections grant.

Q. And as part of this grant you traveled to Florida and Texas -- I mean, Florida and Georgia?

A. Florida, Georgia and Texas, yes.

Q. What were the findings of this grant?

A. I don't know if there was any findings per se. What I was using was I was trying -- I guess the National Institute of Corrections, what they did is they located me, they gave me, to do the review of the management of Death Row inmates, a manual that they came out with, that they ultimately came out with. And they gave it to me, a draft form, and apparently for me to assist them in some of the information validations.

I had an advanced copy. I had the only copy. I used that as a backdrop, if you will, of my review of Death Row management in three states; Texas, Florida and Georgia, and in comparison to California.

So I don't know -- in terms of your question, I don't know if there was a finding or a conclusion by me of any sort. It validated more their findings they had already thought they had concluded in their study and their evaluation nationwide.

Q. Did you prepare a written report about your findings?

A. I don't recall if I did or not. I don't remember. I may have.

Q. The Death Row management grant that

you were discussing, did it produce a document?

A. National Institute of Corrections produced a document.

Q. Do you recall when that was?

A. No, I don't.

Q. As part of the topic of Death Row management, was there some discussion about methods of execution?

A. I was on site at those three institutions. Yes, we discussed methods of execution.

Q. What was the content of those discussions?

A. The wardens and the staff described to me their experience in use of the electric chair in an execution and the use of lethal injection.

Q. Their experience with regard to the electric chair was what?

A. Their experience, if I recall, was that they thought it was a very efficient method of execution, a very quick and painless.

Q. Did they base that on any medical evidence?

A. I don't know what they based it on. They based it on actual observation and carrying

out executions.

Q. Who were the wardens that you discussed the electric chair with?

A. At the time that I discussed the electric chair in Georgia, I believe it was Warden Walter Zant, and in Florida it was Warden Thomas Barton.

Q. Did you have discussions with either Warden Barton or Warden Zant about alternative methods or methods apart from the electric chair?

A. No. Other than they would ask me questions about the gas chamber.

Q. What questions were they asking about the gas chamber?

A. Just questions like: "You still use the gas chamber, don't you?" I said, "Yeah, we do." That's about it.

Q. Did they ask you questions about how quickly the gas chamber operates?

A. Not to my recollection.

Q. Did they ask you any questions about pain experienced during lethal gas executions?

A. No, they did not.

Q. Did you ask them questions about the electric chair's efficiency?

A. No, I didn't.

Q. It just came up as part of the conversation?

A. That's correct. I went there to study the management of Death Row. I didn't specifically go to study methods of execution. But in my being there at the locations where they housed condemned inmates, I assume that it came up as a course of -- just a course of discussion.

Q. When you were discussing how efficient the electric chair was, did they describe what criteria they were using for a painless death?

A. What criteria they were using for a painless death? I guess it's their experience.

Q. When you say "their experience," were they assuming that someone experienced no pain because they were unconscious during the execution?

A. I don't know what their assumptions was based on, what their statements was based on.

Q. What was your impression of what they were saying?

A. I had no impression. I listened to what they had to say. I didn't have no impression at all.

Q. The lethal injection device that you examined, you examined twice?

A. That's correct.

Q. The first time you examined it was during the Death Row management grant that you've just described?

A. That's correct.

Q. Did you have any discussions about how efficient lethal injection as a method of execution was?

A. Yes, I believe we did.

Q. What was the contents of that discussion?

A. The contents of the discussion was that -- well, they just told me that it was an execution by lethal injection and they used three types of medication.

Q. Did they describe how long it took for someone to be rated unconscious by that method of execution?

A. Not on the first occasion that I was on the study, on the grant.

Q. Did they on the first -- we're talking only about the first time.

A. On the first one, what I recall on the

first one, they would -- what sticks out in my mind was that they discussed with me some of the problems that they had with lethal injection in finding usable veins.

In one case they took 45 minutes to find a usable vein on a condemned inmate that was going to be put to death. And finally, even with the inmate's help, they found a vein, and it was in his scrotum and there was only one vein they could use, and they used that one vein to induce the poison or overdose medicine. And I remember that stuck out in my mind.

Q. Do you have some piece of paper in front of you that have some notes on lethal injections?

A. No, just notes about the material they gave me.

Q. Material that the Texas people gave you?

A. No.

Q. This note is dated --

A. I'll put this away --

Q. 10-1-93.

A. -- put this away so it won't distract --

Q. There is a note that says, "Warden, Dave Gillette called regarding your deposition on Monday. He suggested you bring a copy of redacted IP 769. Also, a question arose as to the chemicals and concentration. I have highlighted the information for you. If you have any questions, Dave can be reached at home this weekend," and leaving his number. "Dave will meet you at 3 Embarcadero Center shortly before 10:00 a.m. on Monday. Thank you, Denise."

I was asking that question because I wanted to make sure that the information we're getting is either from your memory or from documents. I just what to be sure of that.

A. That's the best I can recall.

Q. The discussion about lethal injection the first time you visited Texas was with whom?

A. It was with officials in the Texas Department of Corrections at Huntsville. The only person that I remember was Warden Jack Pursley.

Q. And you had a discussion with Warden Pursley about the execution that took 45 minutes?

A. That's correct.

Q. Do you recall the condemned inmate's name?

A. No, I don't.

Q. Do you recall any discussions about a comparison between lethal injection and lethal gas during that time?

A. No. No, not to my knowledge. I remember that our discussion also was, what I remember of it, it affected some of the staff significantly. And I recall that I believe he told me that some of the staff went out on emotional stress because of the touching and everything that they had to do with the condemned inmate.

Q. Did you draw any conclusions about lethal injection as a method of execution in California from your conversation?

A. Yes, I did.

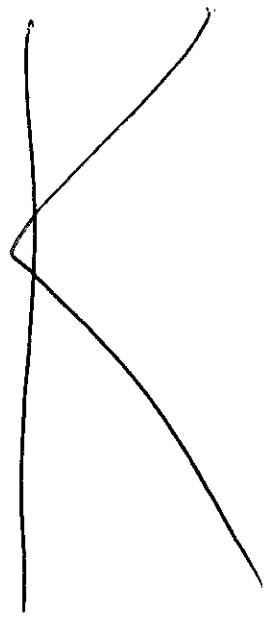
Q. What are those conclusions?

A. I felt that it would create problems for the staff as I had -- I believe I was informed in Texas that it caused problems for staff there that had to carry out.

Q. Do you oppose executions by lethal injections?

A. That was -- then I did.

Q. Have you changed your mind about



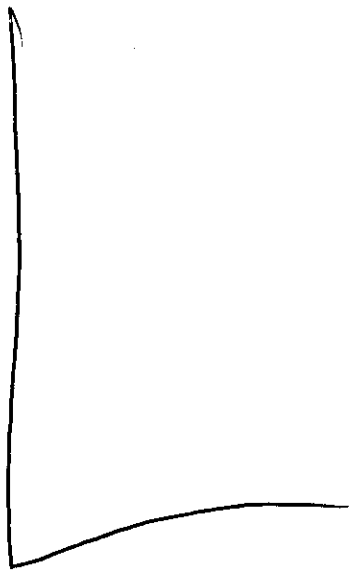
State Euthanasia Statutes 12-31-04

	Explicit Ban on Inhumane Euthanasia Procedures
Florida 828.065 & 828.058	(1) (a) A warm-blooded animal, except one held as food for another animal, offered for sale, or obtained for sale by a pet shop may be euthanized only by administering sodium pentobarbital, a sodium pentobarbital derivative, or a substance or procedure which acts on the central nervous system and is clinically proven to be humane. (3) Succinylcholine chloride, curare, a curariform mixture, a substance which acts as a neuromuscular blocking agent, or a chamber which causes a change in body oxygen, except a chamber which uses commercially bottled carbon monoxide gas, may not be used on a warm-blooded animal. * * * (1) Sodium pentobarbital, a sodium pentobarbital derivative, or other agent the Board of Veterinary Medicine may approve by rule shall be the only methods used for euthanasia of dogs and cats by public or private agencies, animal shelters, or other facilities which are operated for the collection and care of stray, neglected, abandoned, or unwanted animals.
Georgia 4-11-5.1	(a) Except as provided in subsection (b) of this Code section, the use of sodium pentobarbital or a derivative of it shall be the exclusive method for euthanasia of dogs and cats by animal shelters or other facilities which are operated for the collection and care of stray, neglected, abandoned, or unwanted animals. (2) Any substance which is clinically proven to be as humane as sodium pentobarbital and which has been officially recognized as such by the American Veterinary Medical Association may be used in lieu of sodium pentobarbital to perform euthanasia on dogs and cats, but succinylcholine chloride, curare, curariform mixtures, or any substance which acts as a neuromuscular blocking agent may not be used on a dog or cat in lieu of sodium pentobarbital for euthanasia purposes.
Maine Title 17 1044	Prior to the euthanasia of cats and dogs, sedatives may be administered to these animals. Curariform immobilizers shall not be used on cats and dogs prior to euthanasia, except by veterinarians in extreme circumstances.
Maryland 10-611	(a) Prohibited. -- A person may not kill or allow a dog or cat to be killed by use of: (1) a decompression chamber; (2) carbon monoxide gas; or

	(3) curariform drugs.
Massachusetts ch. 140, § 151(A)	. . . to kill or cause to be killed by methods of execution other than gunshot except in case of emergency, T-61, so-called, an euthanasia solution not under the control of the federal Drug Enforcement Administration, unless by a veterinarian, succinylcholine cholide, any drugs that have curariform-like action, electrocution or any other method which causes an unnecessarily cruel death . . . .
New Jersey 4:22-19.3	Whenever any dog, cat, or any other domestic animal is to be destroyed, the use of succinylcholine chloride, curare, curariform drugs, or any other substance which acts as a neuromuscular blocking agent is prohibited.
New York 374	2-b. No person shall euthanize any dog or cat with T-61, curare, any curariform drug, any neuro-muscular blocking agent or any other paralyzing drug.
Oklahoma Title 4 501	3. Euthanasia by only one of the following methods: a. administration of denatured sodium pentobarbital, b. the use of a carbon monoxide chamber, using commercially compressed cylinder gas; provided that kittens and puppies under sixteen (16) weeks of age shall not be euthanized with carbon monoxide but with injections of denatured sodium pentobarbital, or c. any other method approved by the Animal Industries Services Division of the State Department of Agriculture which shall include current acceptable euthanasia recommendations from the American Veterinary Medical Association, with the exception of curariform derivative drugs.
Tennessee 44-17-303	(a) Sodium pentobarbital and such other agents as may be specifically approved by the rules of the board of veterinary medicine shall be the only methods used for euthanasia of nonlivestock animals by public and private agencies, animal shelters and other facilities operated for the collection, care and/or euthanasia of stray, neglected, abandoned or unwanted nonlivestock animals (c) Succinylcholine chloride, curare, curariform mixtures, strychnine, nicotine, chloral hydrate, magnesium or potassium or any substance which acts as a neuromuscular blocking agent, or any chamber which causes a change in body oxygen may not be used on any nonlivestock animal for the purpose of euthanasia.

Texas 821.052(a)	A person may euthanize a dog or cat in the custody of an animal shelter only by administering sodium pentobarbital or commercially compressed carbon monoxide.
* * *	Implicit Ban on Inhumane Euthanasia Procedures
Connecticut 22-344a	Euthanasia of any warm-blooded animal which was offered for sale by a pet shop and not sold or transferred to another owner shall be by lethal injection of sodium pentobarbitol administered by a veterinarian licensed in this state or a person under his supervision.
Delaware Title 3 8001	Any dog, cat or any other animal held by or in the custody of a private or public animal shelter or agency and not reclaimed by the owner within 5 days from written notification to the owner of the animal, if ownership can be determined, unless earlier disposal is recommended by a doctor of veterinary medicine, may be disposed of only by adoption as a companion in a suitable home if a domestic animal, or by rehabilitation to its natural habitat if a wild animal, or by euthanasia performed in 1 of the following ways: (1) By administration of sodium pentobarbital; or (2) With chloroform by a means approved in writing by a licensed veterinarian after inspecting the equipment and method.
Illinois Title 510 ch. 70 § 2.09	Sec. 2.09. Humanely euthanized. "Humanely euthanized" means the painless administration of a lethal dose of an agent or method of euthanasia as prescribed in the Report of the American Veterinary Medical Association Panel on Euthanasia published in the Journal of the American Veterinary Medical Association, March 1, 2001 (or any successor version of that Report), that causes the painless death of an animal. Animals must be handled prior to administration of the agent or method of euthanasia in a manner to avoid undue apprehension by the animal.
Kansas 47-1718	(a) No animal shall be euthanized by any animal control officer, licensee, permittee, officer of an animal shelter or officer of a pound by any means, method, agent or device, or in any way, except through the most current, approved euthanasia methods established by the American veterinary medical association panel on euthanasia.
Kentucky 321.181(17) & 321.207(5)	(17) "Certified animal euthanasia specialist" means a person employed by a certified animal control agency who is authorized by the board, under KRS 321.207, to humanely euthanize animals by administering drugs designated by the board for euthanasia.

	(5) Euthanasia of animals in a certified animal control agency shall be performed by a licensed veterinarian, including a registered veterinary technician or technologist employed by and functioning under the direct supervision of a licensed veterinarian, or a certified animal euthanasia specialist as provided for in subsection (4) of this section. A certified animal control agency that employs a certified animal euthanasia specialist may purchase, possess, and administer sodium pentobarbital or other drugs that the board approves for the euthanasia of animals. Sodium pentobarbital and other drugs approved by the board shall be the only drugs used for the euthanasia of animals in a certified animal control agency.
Louisiana 3:2465	C. Euthanasia: (1) Euthanasia methods and procedures must conform with recommendations outlined in the report of the American Veterinary Medical Association on Euthanasia, dated July 1, 1978, or as revised.
Missouri 2 CSR 30-9.010 & 2 CSR 30-9.020 (F)(5)	(V) Euthanasia means the act of putting an animal to death in a humane manner and shall be accomplished by a method specified as acceptable by the American Veterinary Medical Association Panel on Euthanasia. F. 5. All euthanasia of animals shall be accomplished by a method approved by the 2000 edition, or later revisions, of the American Veterinary Medical Association's Panel on Euthanasia, as incorporated by reference in this rule.
Rhode Island 4-1-34	No person shall put to death, within the state, a racing greyhound or a retired racing greyhound except in a humane manner. For the purposes of this section, the phrase in a humane manner means by means of euthanasia by lethal injection, or by any other standard of humane killing that may be established by the American veterinary medicine association.
South Carolina 47-3-420	(A) Only the following methods of euthanasia may be used to kill animals impounded or quarantined in animal shelters, and the procedure applicable to the method selected must be strictly followed: (1) Barbituric acid derivatives (2) Carbon monoxide gas (3) Shooting: Shooting may be used as a means of euthanasia only in an emergency situation to prevent extreme suffering or in which the safety of people or other animal life is threatened or where it is considered necessary by the South Carolina Department of Natural Resources to eliminate or control the population of feral animals.



2000
Report of the AVMA Panel on Euthanasia

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In a study evaluating the physiologic and behavioral characteristics of dogs exposed to 6% CO in air, Chalifoux and Dallaire[95] could not determine the precise time of loss of consciousness. Electroencephalographic recordings revealed 20 to 25 seconds of abnormal cortical function prior to loss of consciousness. It was during this period that the dogs became agitated and vocalized. It is not known whether animals experience distress; however, humans in this phase reportedly are not distressed.[96] Subsequent studies have revealed that tranquilization with acepromazine significantly decreases behavioral and physiologic responses of dogs euthanatized with CO.[97]

In a comparative study, CO from gasoline engine exhaust and 70% CO_2 plus 30% O_2 were used to euthanatize cats. Euthanasia was divided into 3 phases. Phase I was the time from initial contact to onset of clinical signs (eg, yawning, staggering, or trembling). Phase II extended from the end of phase I until recumbency, and phase III from the end of phase II until death.[54] The study revealed that signs of agitation before loss of consciousness were greatest with CO_2 plus O_2. Convulsions occurred during phases II and III with both methods. However, when the euthanasia chamber was prefilled with CO (ie, exhaust fumes), convulsions did not occur in phase III. Time to complete immobilization was greater with CO_2 plus O_2 (approximately 90 seconds) than with CO alone (approximately 56 seconds).[54] In neonatal pigs, excitation was more likely to precede loss of consciousness if the pigs were exposed to a rapid rise in CO concentration. This agitation was reduced at lower flow rates, or when CO was combined with nitrogen.[98]

In people, the most common symptoms of early CO toxicosis are headache, dizziness, and weakness. As concentrations of carboxyhemoglobin increase, these signs may be followed by decreased visual acuity, tinnitus, nausea, progressive depression, confusion, and collapse.[99] Because CO stimulates motor centers in the brain, loss of consciousness may be accompanied by convulsions and muscular spasms.

Carbon monoxide is a cumulative poison.[96] Distinct signs of CO toxicosis are not evident until the CO concentration is 0.05% in air, and acute signs do not develop until the CO concentration is approximately 0.2% in air. In humans, exposure to 0.32% CO and 0.45% CO for one hour will induce loss of consciousness and death, respectively.[100] Carbon monoxide is extremely hazardous for personnel because it is highly toxic and difficult to detect. Chronic exposure to low concentrations of carbon monoxide may be a health hazard, especially with regard to cardiovascular disease and teratogenic effects.[101-103] An efficient exhaust or ventilatory system is essential to prevent accidental exposure of humans.

Advantages—(1) Carbon monoxide induces loss of consciousness without pain and with minimal discernible discomfort. (2) Hypoxemia induced by CO is insidious, so that the animal appears to be unaware. (3) Death occurs rapidly if concentrations of 4 to 6% are used.

Disadvantages—(1) Safeguards must be taken to prevent exposure of personnel. (2) Any electrical equipment exposed to CO (eg, lights and fans) must be explosion proof.

Recommendations—Carbon monoxide used for individual animal or mass euthanasia is acceptable for dogs, cats, and other small mammals, provided that commercially compressed CO is used and the following precautions are taken: (1) personnel using CO must be instructed thoroughly in its use and must understand its hazards and limitations; (2) the CO chamber must be of the highest quality construction and should allow for separation of individual animals; (3) the CO source and chamber must be located in a well-ventilated environment, preferably out of doors; (4) the chamber must be well lit and have view ports that allow personnel direct observation of animals; (5) the CO flow rate should be adequate to rapidly achieve a uniform CO concentration of at least 6% after animals are placed in the chamber, although some species (eg, neonatal pigs) are less likely to become agitated with a gradual rise in CO concentration;[98] and (6) if the chamber is inside a room, CO monitors must be placed in the room to warn personnel of hazardous concentrations. It is essential that CO use be in compliance with state and federal occupational health and safety regulations.

NONINHALANT PHARMACEUTICAL AGENTS

The use of injectable euthanasia agents is the most rapid and reliable method of performing euthanasia. It is the most desirable method when it can be performed without causing fear or distress in the animal. When the restraint necessary for giving an animal an intravenous injection would impart added distress to the animal or pose undue risk to the operator, sedation, anesthesia, or an acceptable alternate route of administration should be employed. Aggressive, fearful, wild, or feral animals should be sedated or given a nonparalytic immobilizing agent prior to intravenous administration of the euthanasia agent.

When intravenous administration is considered impractical or impossible, intraperitoneal administration of a nonirritating euthanasia agent is acceptable, provided the drug does not contain neuromuscular blocking agents. Intracardiac injection is acceptable only when performed on heavily sedated, anesthetized, or comatose animals. It is not considered acceptable in awake animals, owing to the difficulty and unpredictability of performing the injection accurately. Intramuscular, subcutaneous, intrathoracic, intrapulmonary, intrahepatic, intrarenal, intrasplenic, intrathecal, and other nonvascular injections are not acceptable methods of administering injectable euthanasia agents.

When injectable euthanasia agents are administered into the peritoneal cavity, animals may be slow to pass through stages I and II of anesthesia. Accordingly, they should be placed in small cages in a quiet area to minimize excitement and trauma.

Barbituric acid derivatives

Barbiturates depress the central nervous system in descending order, beginning with the cerebral cortex,

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with loss of consciousness progressing to anesthesia. With an overdose, deep anesthesia progresses to apnea, owing to depression of the respiratory center, which is followed by cardiac arrest.

All barbituric acid derivatives used for anesthesia are acceptable for euthanasia when administered intravenously. There is a rapid onset of action, and loss of consciousness induced by barbiturates results in minimal or transient pain associated with venipuncture. Desirable barbiturates are those that are potent, long-acting, stable in solution, and inexpensive. Sodium pentobarbital best fits these criteria and is most widely used, although others such as secobarbital are also acceptable.

Advantages—(1) A primary advantage of barbiturates is speed of action. This effect depends on the dose, concentration, route, and rate of the injection. (2) Barbiturates induce euthanasia smoothly, with minimal discomfort to the animal. (3) Barbiturates are less expensive than many other euthanasia agents.

Disadvantages—(1) Intravenous injection is necessary for best results and requires trained personnel. (2) Each animal must be restrained. (3) Current federal drug regulations require strict accounting for barbiturates and these must be used under the supervision of personnel registered with the US Drug Enforcement Administration (DEA). (4) An aesthetically objectionable terminal gasp may occur in unconscious animals. (5) These drugs tend to persist in the carcass and may cause sedation or even death of animals that consume the body.

Recommendations—The advantages of using barbiturates for euthanasia in small animals far outweigh the disadvantages. Intravenous injection of a barbituric acid derivative is the preferred method for euthanasia of dogs, cats, other small animals, and horses. Intraperitoneal injection may be used in situations when an intravenous injection would be distressful or even dangerous. Intracardiac injection must only be used if the animal is heavily sedated, unconscious, or anesthetized.

Pentobarbital combinations

Several euthanasia products are formulated to include a barbituric acid derivative (usually sodium pentobarbital), with added local anesthetic agents or agents that metabolize to pentobarbital. Although some of these additives are slowly cardiotoxic, this pharmacologic effect is inconsequential. These combination products are listed by the DEA as Schedule III drugs, making them somewhat simpler to obtain, store, and administer than Schedule II drugs such as sodium pentobarbital. The pharmacologic properties and recommended use of combination products that combine sodium pentobarbital with lidocaine or phenytoin are interchangeable with those of pure barbituric acid derivatives.

A combination of pentobarbital with a neuromuscular blocking agent is not an acceptable euthanasia agent.

Chloral hydrate

Chloral hydrate depresses the cerebrum slowly; therefore, restraint may be a problem for some animals. Death is caused by hypoxemia resulting from progressive depression of the respiratory center, and may be preceded by gasping, muscle spasms, and vocalization.

Recommendations—Chloral hydrate is conditionally acceptable for euthanasia of large animals only when administered intravenously, and only after sedation to decrease the aforementioned undesirable side effects. Chloral hydrate is not acceptable for dogs, cats, and other small animals because the side effects may be severe, reactions can be aesthetically objectionable, and other products are better choices.

T-61

T-61 is an injectable, nonbarbiturate, non-narcotic mixture of 3 drugs used for euthanasia. These drugs provide a combination of general anesthetic, curariform, and local anesthetic actions. T-61 has been withdrawn from the market and is no longer manufactured or commercially available in the United States. It is available in Canada and other countries. T-61 should be used only intravenously and at carefully monitored rates of injection, because there is some question as to the differential absorption and onset of action of the active ingredients when administered by other routes.[1]

Tricaine methane sulfonate (MS 222, TMS)

MS 222 is commercially available as tricaine methane sulfonate (TMS), which can be used for the euthanasia of amphibians and fish. Tricaine is a benzoic acid derivative and, in water of low alkalinity (< 50 mg/L as $CaCo_3$); the solution should be buffered with sodium bicarbonate.[104] A 10 g/L stock solution can be made, and sodium bicarbonate added to saturation, resulting in a pH between 7.0 and 7.5 for the solution. The stock solution should be stored in a dark brown bottle, and refrigerated or frozen if possible. The solution should be replaced monthly and any time a brown color is observed.[105] For euthanasia, a concentration ≥ 250 mg/L is recommended and fish should be left in this solution for at least 10 minutes following cessation of opercular movement.[104] In the United States, there is a 21-day withdrawal time for MS 222; therefore, it is not appropriate for euthanasia of animals intended for food.

Potassium chloride in conjunction with prior general anesthesia

Although unacceptable and condemned when used in unanaesthetized animals, the use of a supersaturated solution of potassium chloride injected intravenously or intracardially in an animal under general anesthesia is an acceptable method to produce cardiac arrest and death. The potassium ion is cardiotoxic, and rapid intravenous or intracardiac administration of 1 to 2 mmol/kg of body weight will cause cardiac arrest. This is a preferred injectable technique for euthanasia of livestock or wildlife species to reduce the risk of toxicosis for predators or scavengers in situations where carcasses of euthanatized animals may be consumed.[105,107]

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Advantages—(1) Potassium chloride is not a controlled substance. It is easily acquired, transported, and mixed in the field. (2) Potassium chloride, when used with appropriate methods to render an animal unconscious, results in a carcass that is potentially less toxic for scavengers and predators in cases where carcass disposal is impossible or impractical.

Disadvantage—Rippling of muscle tissue and clonic spasms may occur on or shortly after injection.

Recommendations—It is of utmost importance that personnel performing this technique are trained and knowledgeable in anesthetic techniques, and are competent in assessing anesthetic depth appropriate for administration of potassium chloride intravenously. Administration of potassium chloride intravenously requires animals to be in a surgical plane of anesthesia characterized by loss of consciousness, loss of reflex muscle response, and loss of response to noxious stimuli. Saturated potassium chloride solutions are effective in causing cardiac arrest following rapid intracardiac or intravenous injection. Residual tissue concentrations of general anesthetics after anesthetic induction have not been documented. Whereas no scavenger toxicoses have been reported with potassium chloride in combination with a general anesthetic, proper carcass disposal should always be attempted to prevent possible toxicosis by consumption of a carcass contaminated with general anesthetics.

Unacceptable injectable agents

When used alone, the injectable agents listed in Appendix 4 (strychnine, nicotine, caffeine, magnesium sulfate, potassium chloride, cleaning agents, solvents, disinfectants and other toxins or salts, and all neuromuscular blocking agents) are unacceptable and are absolutely condemned for use as euthanasia agents.

PHYSICAL METHODS

Physical methods of euthanasia include captive bolt, gunshot, cervical dislocation, decapitation, electrocution, microwave irradiation, kill traps, thoracic compression, exsanguination, stunning, and pithing. When properly used by skilled personnel with well-maintained equipment, physical methods of euthanasia may result in less fear and anxiety and be more rapid, painless, humane, and practical than other forms of euthanasia. Exsanguination, stunning, and pithing are not recommended as a sole means of euthanasia, but should be considered adjuncts to other agents or methods.

Some consider physical methods of euthanasia aesthetically displeasing. There are occasions, however, when what is perceived as aesthetic and what is most humane are in conflict. Physical methods may be the most appropriate method for euthanasia and rapid relief of pain and suffering in certain situations. Personnel performing physical methods of euthanasia must be well trained and monitored for each type of physical technique performed. That person must also be sensitive to the aesthetic implications of the method and inform onlookers about what they should expect when possible.

Since most physical methods involve trauma, there is inherent risk for animals and humans. Extreme care and caution should be used. Skill and experience of personnel is essential. If the method is not performed correctly, animals and personnel may be injured. Inexperienced persons should be trained by experienced persons and should practice on carcasses or anesthetized animals to be euthanatized until they are proficient in performing the method properly and humanely. When done appropriately, the panel considers most physical methods conditionally acceptable for euthanasia.

Penetrating captive bolt

A penetrating captive bolt is used for euthanasia of ruminants, horses, swine, laboratory rabbits, and dogs.[108] Its mode of action is concussion and trauma to the cerebral hemisphere and brainstem.[109,110] Captive bolt guns are powered by gunpowder or compressed air and must provide sufficient energy to penetrate the skull of the species on which they are being used.[109] Adequate restraint is important to ensure proper placement of the captive bolt. A cerebral hemisphere and the brainstem must be sufficiently disrupted by the projectile to induce sudden loss of consciousness and subsequent death. Accurate placement of captive bolts for various species has been described.[109-112] A multiple projectile has been suggested as a more effective technique, especially for large cattle.[109]

A nonpenetrating captive bolt only stuns animals and should not be used as a sole means of euthanasia (see "Stunning" under "Adjunctive Methods").

Advantage—The penetrating captive bolt is an effective method of euthanasia for use in slaughterhouses, in research facilities, and on the farm when use of drugs is inappropriate.

Disadvantages—(1) It is aesthetically displeasing. (2) Death may not occur if equipment is not maintained and used properly.

Recommendations—Use of the penetrating captive bolt is an acceptable and practical method of euthanasia for horses, ruminants, and swine. It is conditionally acceptable in other appropriate species. The nonpenetrating captive bolt must not be used as a sole method of euthanasia.

Euthanasia by a blow to the head

Euthanasia by a blow to the head must be evaluated in terms of the anatomic features of the species on which it is to be performed. A blow to the head can be a humane method of euthanasia for neonatal animals with thin craniums, such as young pigs, if a single sharp blow delivered to the central skull bones with sufficient force can produce immediate depression of the central nervous system and destruction of brain tissue. When properly performed, loss of consciousness is rapid. The anatomic features of neonatal calves, however, make a blow to the head in this species unacceptable. Personnel performing euthanasia by use of a blow to the head must be properly trained and monitored for proficiency with this method of euthanasia, and they must be aware of its aesthetic implications.

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Appendix 2

Acceptable agents and methods of euthanasia—characteristics and modes of action (refer to text for details)

Agent	Classification	Mode of action	Rapidity	Ease of performance	Safety for personnel	Species suitability	Efficacy and comments
Barbiturates	Hypoxia attributable to depression of vital centers	Direct depression of cerebral cortex, subcortical structures, and vital centers; direct depression of heart muscle	Rapid onset of anesthesia	Animal must be restrained; personnel must be skilled to perform IV injection	Safe except human abuse potential; DEA-controlled substance	Most species	Highly effective when appropriately administered; acceptable IP in small animals and IV
Benzocaine hydrochloride	Hypoxia attributable to depression of vital centers	Depression of CNS	Very rapid, depending on dose	Easily used	Safe	Fish, amphibians	Effective but expensive
Carbon dioxide (bottled gas only)	Hypoxia attributable to depression of vital centers	Direct depression of cerebral cortex, subcortical structures, and vital centers; direct depression of heart muscle	Moderately rapid	Used in closed container	Minimal hazard	Small laboratory animals, birds, cats, small dogs, rabbits, mink (high concentrations required), zoo animals, amphibians, fish, some reptiles, swine	Effective, but time required may be prolonged in immature and neonatal animals
Carbon monoxide (bottled gas only)	Hypoxia	Combines with hemoglobin, preventing its combination with oxygen	Moderate onset time, but insidious so animal is unaware of onset	Requires appropriately maintained equipment	Extremely hazardous, toxic, and difficult to detect	Most small species including dogs, cats, rodents, mink, chinchillas, birds, reptiles, amphibians, zoo animals, rabbits	Effective; acceptable only when equipment is properly designed and operated
Inhalant anesthetics	Hypoxia attributable to depression of vital centers	Direct depression of cerebral cortex, subcortical structures, and vital centers	Moderately rapid onset of anesthesia, excitation may develop during induction	Easily performed with closed container; can be administered to large animals by means of a mask	Must be properly scavenged or vented to minimize exposure to personnel	Some amphibians, birds, cats, dogs, furbearing animals, rabbits, some reptiles, rodents and other small mammals, zoo animals, fish, free-ranging wildlife	Highly effective provided that subject is sufficiently exposed; either is conditionally acceptable
Microwave irradiation	Brain enzyme inactivation	Direct inactivation of brain enzymes by rapid heating of brain	Very rapid	Requires training and highly specialized equipment	Safe	Mice, rats	Highly effective for special needs
Penetrating captive bolt	Physical damage to brain	Direct concussion of brain tissue	Rapid	Requires skill, adequate restraint, and proper placement of captive bolt	Safe	Horses, ruminants, swine	Instant loss of consciousness, but motor activity may continue
2-Phenoxyethanol	Hypoxia attributable to depression of vital centers	Depression of CNS	Very rapid, depending on dose	Easily used	Safe	Fish	Effective but expensive
Potassium chloride (intracardially or intravenously in conjunction with general anesthesia only)	Hypoxia	Direct depression of cerebral cortex, subcortical structures, and vital centers secondary to cardiac arrest.	Rapid	Requires training and specialized equipment for remote injection anesthesia, and ability to give IV injection of potassium chloride	Anesthetics may be hazardous with accidental human exposure	Most species	Highly effective, some clonic muscle spasms may be observed
Tricaine methane sulfonate (TMS, MS 222)	Hypoxia attributable to depression of vital centers	Depression of CNS	Very rapid, depending on dose	Easily used	Safe	Fish, amphibians	Effective but expensive

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Appendix 4

Some unacceptable agents and methods of euthanasia (refer to text for details)

Agent or method	Comments
Air embolism	Air embolism may be accompanied by convulsions, opisthotonos, and vocalization. If used, it should be done only in anesthetized animals.
Blow to the head	Unacceptable for most species.
Burning	Chemical or thermal burning of an animal is not an acceptable method of euthanasia.
Chloral hydrate	Unacceptable in dogs, cats, and small mammals.
Chloroform	Chloroform is a known hepatotoxin and suspected carcinogen and, therefore, is extremely hazardous to personnel.
Cyanide	Cyanide poses an extreme danger to personnel and the manner of death is aesthetically objectionable.
Decompression	Decompression is unacceptable for euthanasia because of numerous disadvantages. (1) Many chambers are designed to produce decompression at a rate 15 to 60 times faster than that recommended as optimum for animals, resulting in pain and distress attributable to expanding gases trapped in body cavities. (2) Immature animals are tolerant of hypoxia, and longer periods of decompression are required before respiration ceases. (3) Accidental recompression, with recovery of injured animals, can occur. (4) Bleeding, vomiting, convulsions, urination, and defecation, which are aesthetically unpleasant, may develop in unconscious animals.
Drowning	Drowning is not a means of euthanasia and is inhumane.
Exsanguination	Because of the anxiety associated with extreme hypovolemia, exsanguination should be done only in sedated, stunned, or anesthetized animals.
Formalin	Direct immersion of an animal into formalin, as a means of euthanasia, is inhumane.
Household products and solvents	Acetone, quaternary compounds (including CCl_4), laxatives, clove oil, dimethylketone, quaternary ammonium products*, antacids, and other commercial and household products or solvents are not acceptable agents for euthanasia.
Hypothermia	Hypothermia is not an appropriate method of euthanasia.
Neuromuscular blocking agents (nicotine, magnesium sulafte, potassiumchloride, all curariform agents)	When used alone, these drugs all cause respiratory arrest before loss of consciousness, so the animal may perceive pain and distress after it is immobilized.
Rapid freezing	Rapid freezing as a sole means of euthanasia is not considered to be humane. If used, animals should be anesthetized prior to freezing.
Strychnine	Strychnine causes violent convulsions and painful muscle contractions.
Stunning	Stunning may render an animal unconscious, but it is not a method of euthanasia (except for neonatal animals with thin craniums). If used, it must be immediately followed by a method that ensures death.
Tricaine methane sulfonate (TMS, MS 222)	Should not be used for euthanasia of animals intended as food.

*Roccal D Plus, Pharmacia & Upjohn, Kalamazoo, Mich.

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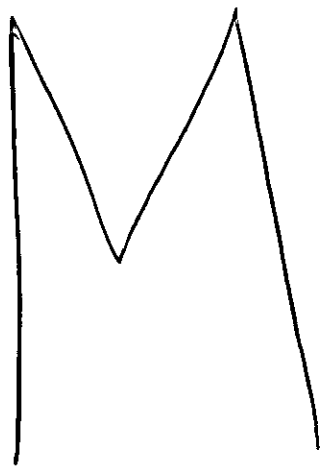

Foes of execution criticize slow death
Proponents say that worry is unwarranted
- Kevin Fagan, Chronicle Staff Writer
Wednesday, January 30, 2002

Death penalty opponents said they were appalled that yesterday's execution of killer Stephen Wayne Anderson took a full 29 minutes to complete, but those who helped put him on death row said their concerns were misplaced at best.

"Everybody seems to think this is a very passive, easy process, but if it takes a half-hour, and takes four minutes for the body to stop convulsing, then this is not the humane process that many people feel that it is," said Lance Lindsey, who helped lead an anti-execution protest of about 500 people outside the prison gates during the execution.

"This is a violent act, a horrible example for society and for our children. "

No matter how long it took, the time Anderson spent lying on a San Quentin death chamber gurney as poisons entered his veins was still more merciful than the murder he dealt to his victims, execution advocates responded.

"Didn't he just go to sleep?" said former San Bernardino County Sheriff's Det. Wes Daw, who interrogated Anderson nearly 22 years ago after he shot an elderly woman to death. "I mean, what's wrong with him just sleeping for a few minutes before he dies?

"The bottom line is, maybe he's repented and done everything right for years, but you know there are always consequences for an act," Daw said. "He needed to pay for what he did, and that's just what happened."

Anderson was pronounced dead at 12:30 a.m. and left no last words, preferring instead to let his voluminous writings as an accomplished playwright and poet speak for themselves.

Anderson, 48, was executed for the 1980 shooting death of 81-year-old Elizabeth Lyman of San Bernardino County during a burglary. He then fixed himself some noodles in her kitchen. He also confessed killing two men before that, although he later recanted parts of those admissions.

The execution had begun at 12:01 a.m., when Anderson was led into the prison's apple-green death chamber and strapped onto a padded gurney. As he lay with his arms and legs secured, a lethal chemical mixture was pumped into his veins, rendering him unconscious, stopping his breathing and, finally, paralyzing his heart.

Anderson was the 10th man to be put to death in California since executions resumed in 1992 after a 25-year hiatus.

The only witnesses Anderson asked for were his two attorneys -- Robert Horwitz and federal public defender Margo Rocconi -- and Linda Meza, the psychologist who worked for his defense and befriended him. No relatives of Anderson or his victims watched him die.

The death chamber was eerily quiet, unlike in other executions, with no displays of emotion -- no tears, no sighing, not even a cough. The otherwise inexpressive Anderson raised his head from the gurney just before the deadly fluids began to flow, saw Rocconi, and smiled. She mouthed the words, "I love you" three times, and Rocconi later said he mouthed "I love you" -- an exchange that reflected their platonic, though close, friendship as they fought together through the years in court to try to save Anderson's life.

San Bernardino Deputy District Attorney David Whitney, who fought Anderson's appeals in court, sat in a chair in front of the death chamber, staring stoically throughout the execution, hands folded in his lap. He betrayed none of the emotion that was so strong prior to the execution when he dismissed Anderson's "pretty poetry" and said he richly deserved to die.

The entire execution took longer than usual, veteran execution witnesses said -- although some executions, including last March's injection of Robert Lee Massie, also have taken about a half-hour.

After the poisons began to enter his veins and he was rendered unconscious, his stomach heaved up and down dozens of times for about four minutes before he died -- unusual, because the chests of inmates being lethally injected typically heave once or twice, and then fall still.

Anderson's last meal was two grilled cheese sandwiches, a pint of plain cottage cheese, and a mix of hominy and corn, topped off by a piece of peach pie, a pint of chocolate chip ice cream and radishes.

His remains were taken to a nearby mortuary yesterday, where his brother and his attorneys were making arrangements for his cremation.

After his death, his attorneys released part of one of his poems, titled "Unchained Visions, #9:"

If no other misses you, I will:

I will sense the emptiness

where once you breathed.

Chronicle staff writers John Koopman, Pamela Podger and Harriet Chiang contributed to this report. / E-mail Kevin Fagan at kfagan@sfchronicle.com.

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LA WEEKLY
FEBRUARY 1 - 7, 2002

The Killing Routine

Stephen Wayne Anderson's final 15 minutes
by Sara Catania

"Snowball's Chance" read the lead headline on the *San Francisco Chronicle*'s front page Tuesday, the day condemned inmate Stephen Wayne Anderson was executed at San Quentin. It referred to a freak Arctic storm that blanketed the Bay Area, but also could have described the odds faced by Anderson's attorneys as their 11th-hour efforts to save their client faded, and his death at the hands of the state became inevitable.

Picture the taking of a life. (By Ted Soqui)

I was one of the 11 journalists who witnessed his death.

At about 11:45 p.m. Monday, we are shuttled to an employee lounge and assigned individual guards as escorts.

They conduct an all-body pat-down. They take our notebooks and pens and give us prison-issue loose-leaf paper and sharpened pencils. The female reporters are assigned to female guards. As I stand around with mine, waiting for the okay to head over to the execution chamber, she talks a little about her job. She changes assignments in the prison, never staying in one section long enough to form any kind of connection with the inmates. She has worked on death row, even on Anderson's cellblock, but she does not remember him. "Usually I don't recognize them unless I see them on TV," she says.

K.J. Williams was a guard when Anderson first came to death row and is now in charge of managing the day-to-day activities of the nearly 600 men on the row. He goes by the informal title "condemned captain" and said he spoke with Anderson a few hours earlier in the evening. He is well aware that Anderson, now 48, was convicted of the shooting death 20 years ago of retired piano teacher Elizabeth Lyman as he burglarized her home in San Bernardino County.

Anderson's attorneys believe their client never meant to kill Lyman, that he regretted the act and repented. They point to the dozens of poems and stories he wrote while in prison as examples of his rehabilitation.

Williams said that he "never read any of that stuff." And he would have none of the sympathy talk. "If you let him out of here," he said, "he'll do the same thing again."

Just before midnight the group starts getting antsy. All of the reporters have been here for hours, and they are anxious to get on with the main event.

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A guard glances at the clock. "It's kinda like, you shoulda been in there already," he says. Someone responds: "Unless there was a last-minute stay."

"Nah," the guard replies. "He's gone. There's no hope for this guy. He's a done deal." He pauses, then continues. "It's pretty scary though. Knowing you're gonna die. Weird stuff."

Anderson spent his final days in quiet solitude. He gave away his television and cassette player to fellow inmates and refused all phone calls and visits from attorneys and spiritual advisers. The guards watching over him were his only company as he ate his last meal: grilled cheese sandwiches, cottage cheese, hominy, peach pie, chocolate-chip ice cream and radishes. His attorneys, meantime, launched a series of last-ditch appeals, arguing that Governor Gray Davis, who has never commuted a death sentence, is incapable of justly considering a clemency plea. The appeals, to the U.S. District Court, U.S. Court of Appeals, and the U.S. Supreme Court, were rejected.

At 12:02, we are summoned. It's a short, cold walk to the death house, a small, high-ceilinged chamber that opens directly to the outdoors. The centerpiece is an octagonal, sea-foam-green room — the gas chamber turned lethal-injection cell. It looks like a giant fish tank. Seven of the tank's sides are paned in thick Plexiglas secured with heavy, dungeonlike bolts.

The tank's eighth side holds a curve-topped door. The observation area, set back from the tank by a white-painted iron rail, wraps around it on three sides. In front is a row of metal folding chairs where the victim's family members customarily sit. But for the first time in the 10 executions and 10 years since California reinstated state-sanctioned killing, no family members of the victims are here.

In late December Elizabeth Lyman's son-in-law issued a signed statement saying the family did not "want or need Stephen Anderson to pay with his life for the death of our beloved mother and grandmother." Their chairs are filled with representatives from the District Attorney's Office and
other "official" witnesses who support Anderson's death.

Behind the folding chairs is a narrow aisle, and behind that, lining the back walls, two wooden steps for additional witnesses to stand on. One wall is designated for the cluster of San Quentin and California Department of Corrections employees and friends. On another, the journalists. Along the final wall stands by far the smallest group: Anderson's supporters. There are only his attorneys, Margo Rocconi and Robert Horwitz, and a psychiatrist who testified at his trial.

The room is silent. We have been warned by the guards that talking is an ejectable offense. Anderson emerges through the curve-topped door at the back of the death tank, shackled at the wrists and waist and flanked by five guards. His brown hair is buzzed short.

He has a beard and mustache and is dressed in new jeans and a blue, short-sleeved prison shirt that reveals arms covered in faded tattoos. He wears white gym socks and no shoes.

Anderson heaves his 300-pound frame onto a pale-green gurney about 20 feet from where I stand. The guards begin to strap him down, starting with a thick, black airplane-style belt across his middle, attached to a similar pair of shoulder straps. His ankles and wrists are secured with wide leather strips. A tall, bald guard double-checks the belts and three guards leave.

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Anderson coughs. Two other guards — a man and a woman— appear. They are carrying a

plastic tray of medical supplies. Each dons latex gloves and sets to work on an arm, tying it off, tapping for a vein. According to death-house procedure, the poison is administered in only one arm, but both arms are prepared in case something goes wrong. Anderson clenches his fists helpfully. The woman finishes quickly, inserting the tube that will connect his left arm to the poison. The male guard appears to have a harder time, cleaning Anderson's arm repeatedly and at one point removing a glove in frustration. After another minute, he finds a vein, finishes his work and leaves.

The remaining team rotates the gurney a quarter turn and hooks Anderson up to the IV lines, which extend out of the room. Finally, they wrap Anderson's hands in long, white bandages, then leave. Anderson is alone. He lifts his head and smiles at Horwitz and Rocconi. Horwitz nods. Rocconi smiles broadly and mouths the words "I love you." Anderson responds with a silent "Thank you." He lies back down.

At 12:16, a guard announces, "The execution shall now proceed."

During a counseling session for the media preceding the execution, prison psychologist Maurice Lyons did his best to reassure us that what we were about to witness would have no permanent damaging effect on us. "Even if you're for the death penalty, watching an execution can be a little disturbing," he said. "The bottom line is, nothing is wrong with you. You go through a normal response." That response can include recurring sleeplessness, tunnel vision, a distorted sense of time, emotional numbness, withdrawal and what Lyons called "intrusive recollections of the event — dreams, nightmares and other intrusive images."

Anderson blinks and stares at the ceiling. His right foot twitches. His head begins swaying slightly from side to side. His eyes fall shut. His stomach begins to spasm. Contraction, pause. Contraction, pause. Contraction, pause. Minutes go by and the spasms continue. Contraction, pause. Contraction, pause.

At the counseling session, Lyons described the drugs, a lethal cocktail of sodium pentothal to sedate him, pancuronium bromide to stop his breathing and potassium chloride to stop his heart.

The room is deadly still except for unseen steam pipes that burble and hiss. Reporters scribble notes. Rocconi's face is twisted in anguish. The rest of the group looks impassive. A faint, multitoned whistle, like a gentle snoring, appears to be coming from the chamber. But Anderson has stopped moving. The sound is coming from monitors behind the closed door. The whistling continues. Anderson continues not breathing. Another five minutes go by with no movement. A slip of paper is passed to a guard, who reads it aloud. The prisoner is dead.

*Archive of **previous** **Weekly** **articles** on the death penalty.*

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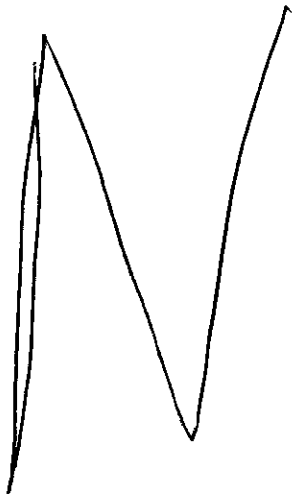

Double-Slayer Dies at San Quentin
Ex-Buddhist monk executed despite appeal by pope
- Peter Fimrite, Pamela J. Podger, Harriet Chiang, Chronicle Staff Writers
Tuesday, February 9, 1999

SAN QUENTIN -- A quiet former Buddhist monk was executed at San Quentin State Prison this morning 16 years after he was sentenced for the murders of two people during a bloody robbery in Orange County.

Shortly after midnight, a lethal cocktail of drugs was injected into Jaturun (Jay) Siripongs as he lay strapped to a gurney inside the prison's converted gas chamber.

Siripongs, who was trained as a monk in his native Thailand, was the sixth man and the first member of a minority group to be put to death in California since capital punishment was reinstated in 1977.

His death sentence was carried out despite an eleventh-hour plea by Pope John Paul II for Governor Gray Davis to spare the condemned man's life.

Siripongs' face was expressionless and his eyes were closed as the poisons began flowing into his bloodstream. After less than a minute, his stomach dropped as if he were inhaling. But there was no exhale that followed.

Two minutes after the injections began, his head shook, and he slowly opened his mouth as if gasping for air. His Adam's apple moved as he took several more breaths. And then it stopped.

The initial dose of sodium Pentothal that rendered him unconscious was followed by 50 cubic centimeters of pancuronium bromide to paralyze his diaphragm and stop his breathing.

The final poison was potassium chloride to paralyze his heart.

The process, which began at 12:04 a.m., was somber and eerily quiet. The witnesses included Siripongs' sister, who stood between the inmate's two lawyers, holding their hands.

The son of one of the victims, Vitoon Harusadangkul, appeared to be holding back tears. At one point he looked up toward the sky and then dropped his head.

Siripongs was declared dead at 12:19 a.m.

He had no last words.

Siripongs, 43, was the fourth inmate of the six to die by lethal injection. The other two were gassed.

A jury convicted Siripongs of the 1981 murders of Garden Grove market manager Packawan (Pat) Wattanaporn, who was strangled, and store clerk Quach Nguyen, who was

stabbed repeatedly.

In his fight to stay alive, the condemned man received an outpouring of support from the Thai government, the husband of one of the victims, two jurors and a former warden of San Quentin.

He was scheduled to be executed in November, but a federal judge stayed the execution with just six hours to spare.

This time there was no reprieve.

After the California Supreme Court refused to hear his appeal on Thursday, Siripongs' lawyers turned to Governor Davis, hoping that he would be swayed by Siripongs' exemplary conduct in prison as well as his remorse for taking part in the robbery. The inmate repeatedly insisted that he had killed no one and that the murders were committed by an accomplice, whom Siripongs refused to name.

On Saturday, Davis, whose support of the death penalty was a crucial part of his successful gubernatorial campaign, turned down Siripongs' request for clemency.

The governor refused to reconsider his decision despite John Paul II's plea yesterday for mercy. In a letter sent on behalf of the pope, Archbishop Gabriel Montalvo, the Vatican's representative in Washington D.C., asked Davis to make ``a gesture of mercy that would certainly contribute to the promotion of nonviolence in today's society."

After the pope's plea, the governor's press secretary, Michael Bustamante, said that ``the governor made his decision on Saturday."

Siripongs' remaining hope was with the federal courts. But yesterday evening, both the U.S. Court of Appeals in San Francisco and the U.S. Supreme Court refused to hear his appeals.

There was an eerie silence at the prison yesterday as 6,000 inmates remained in their cells under lockdown, waiting for the fateful hour. Outside, demonstrators, who braved a driving winter storm, gathered with signs protesting the death penalty.

Siripongs' humble manner and spiritualism won the admiration of several prison officials who sent heartfelt letters to the governor in support of clemency. An accomplished artist, Siripongs also inspired deep affection among his fellow inmates, who cheered when his last execution date was delayed.

Among those who supported clemency was Packawan Wattanaporn's husband, Surachai, who found his wife and the clerk dead Dec. 15, 1981, inside the Pantai Market, which he owned and his wife managed.

There was, nonetheless, a mountain of evidence against Siripongs, who had worked part time at the Pantai Market and knew both victims.

Siripongs was arrested two days after the murders when he tried to purchase a television set from a Sears store by using a credit card belonging to Wattanaporn's husband. Five other credit cards and a gold necklace belonging to the Wattanaporns were found in his wallet.

When Siripongs was arrested, he had cuts on his hands. Traces of blood were found in his car.

Yesterday, in accordance with prison guidelines, Siripongs was moved at 6 p.m. to a cell near the death row office. The execution handbook required him to be strip- searched and then scanned with a metal detector.

Prison guards then escorted him to a ``death watch" cell a few feet away from the execution chamber. There, he was offered his last meal -- two cups of canned peaches and iced tea.

Just before he was taken to the execution chamber, he received a new outfit -- a blue shirt, blue jeans, an undershirt, shorts, socks and hospital slippers.

As the final minutes ticked away, Siripongs awaited the signal from Warden Arthur Calderon that the execution should begin.

DEATH ROW IN CALIFORNIA

EXECUTIONS SINCE 1992
Total: 6

	Date executed	Time on death row
Robert Alton Harris	April 21, 1992	13 years, 1 month
David Mason	Aug. 4, 1993	9 years, 7 months
William George Bonin	Feb. 23, 1996	13 years, 1 month
Keith Daniel Williams	May 3, 1996	17 years
Thomas M. Thompson	July 14, 1998	14 years, 1 month
Jaturun Siripongs	Feb. 9, 1999	15 years, 9 months

NUMBER OF INMATES
Total: 516 (largest in the nation)

	Males	Females
White	221	4
African American	184	2
Latino	82	2
Other	20	1
Total	507	9

AVERAGE ANNUAL COST PER INMATE: $20,758
OLDEST INMATE ON DEATH ROW: Raymond Frederick Johns, 74
LONGEST STAY ON DEATH ROW: Lavell Frierson, 20 years, 6 months

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DEATH ROW FATALITIES OTHER THAN EXECUTIONS
Since 1992

Heart attack	2
Cirrhosis	1
Allergic reaction	1
Other natural causes	5
Suicide	6
Stabbed by inmate	1
Shot by guard	1
Unknown	1
Total	18

Source: Department of Corrections http://www.cdc.state.ca.us

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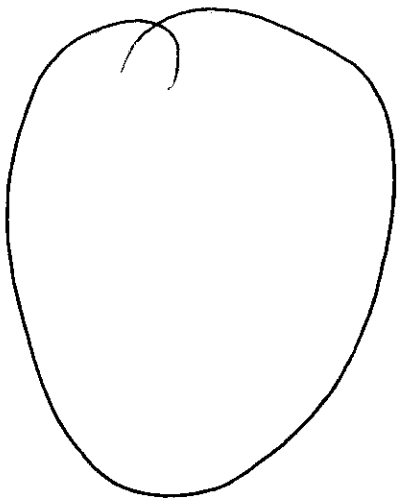

DEATH ROW SPEAKS

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On Death Row, a Battle over the Fatal Cocktail

By Adam Liptak
The New York Times

Thursday 16 September 2004

Frankfort, Ky. - Edward L. Harper, the last man to be executed in this state, took 12 minutes to die. Observers on that spring evening in 1999 said he looked tranquil as an executioner pumped a series of three chemicals into him - a barbiturate to make him unconscious, then a paralyzing agent, and then a chemical used in road salt, to stop his heart.

The next morning, a state medical examiner performed an autopsy. She noted, among many other things, that Mr. Harper's heart weighed 420 grams and that he was wearing a cloth scapular when he died. It said, "Whosoever has this shall not suffer eternal fire."

The examiner's report also determined the levels of the lethal-injection chemicals in Mr. Harper's blood, drawn from three places in his corpse.

Now, as two other Kentucky inmates face execution, their lawyers say those numbers prove that Mr. Harper was tortured to death. They say that the drug meant to make him unconscious did not work, meaning the other two drugs subjected him to suffocation and searing pain while he was wide awake but unable to move or speak. In a suit filed in Circuit Court here in August, they have asked a judge to halt their clients' executions as cruel and unusual punishment.

Opponents of the death penalty have filed challenges to the three-chemical combination used in Kentucky and about 30 other states in recent years. But those cases were based on speculation about the drugs' effects, and judges have dismissed many of them on procedural grounds or because medical experts assured them that the first drug was certain to

produce unconsciousness and perhaps be lethal itself.

The information in the Harper autopsy and in similar data from two other states radically changes the debate over the humanity of the standard lethal injection chemicals, lawyers for the inmates here say. What had before been only a theoretical concern, they contend, turns out to be provable fact.

David Smith, an assistant attorney general, declined to comment on the suit. The state has not yet filed a response in court.

There is no serious dispute that the first drug, if administered properly, should be adequate to render inmates unconscious for hours.

"If we have a working I.V. and the right drugs are given in the right order, I can absolutely guarantee that there is no suffering," said Dr. Mark Dershwitz, a professor of anesthesiology at the University of Massachusetts and an expert in the effects of drugs. "The recipe itself is medically absolutely sound."

But doctors are forbidden to participate in executions in Kentucky and many other states, and prison personnel are generally untrained in preparing and injecting drugs.

In an affidavit supporting the Kentucky inmates, Dr. Mark J. S. Heath, an anesthesiologist who teaches at Columbia University, wrote that there were countless ways for prison personnel to fail to deliver the first drug properly. Among them, Dr. Heath wrote, are mistakes in mixing the drug, which is stored as a powder; problems with intravenous tubes; and the possibility that "the drug may be diluted or diverted by personnel intending to use it for purposes of substance abuse."

Earlier challenges have focused on the second drug in the typical sequence, pancuronium bromide. It paralyzes the skeletal muscles but does not affect the brain or nerves. A person injected only with it remains conscious but cannot move or speak as he suffocates.

Nineteen states prohibit the chemical in the euthanasia of animals.

"They couldn't kill my dog Hunter this way in Kentucky," said Ted Shouse, a lawyer for the two inmates, Ralph Baze and Thomas C. Bowling. Mr. Baze killed a sheriff and a deputy in 1992. Mr. Bowling killed a couple and hurt their infant son in 1990.

Some judges have said they are troubled by the use of pancuronium

bromide, which makes the inmate appear serene but could in theory mask intense pain. Last year, a Tennessee judge wrote that the chemical "serves no legitimate purpose" in executions and is used only to make them "more palatable and acceptable to society" by masking the sounds and seizures that often accompany even painless death.

But the judge, Ellen Hobbs Lyle of Chancery Court in Nashville, said objections to the chemical were "hypothetical and metaphysical," because the first drug, a short-acting barbiturate called sodium thiopental, makes inmates unconscious while the paralyzing agent does its work. An autopsy conducted on Robert G. Coe, executed in Tennessee in 2000, the judge wrote, proved that the five grams of sodium thiopental he received first had rendered him unconscious and probably killed him before the other chemicals did their work.

But the level of sodium thiopental found in Mr. Harper's body tells a different story, lawyers for the Kentucky inmates say. Using standards submitted by a prosecution expert in other cases, lawyers for the death row inmates here say there is a 67 percent to 100 percent chance that Mr. Harper was conscious while he suffocated and felt the pain caused by the third drug, potassium chloride, which stopped his heart. The varying numbers are based on the three different blood samples.

Dr. Dershwitz, the prosecution expert who developed the standards that the Kentucky inmates now rely on, said the levels of barbiturate found in Mr. Harper's body, which varied from 3 to 6.5 milligrams per liter, were potentially troubling.

"The blood level should be a lot higher than seven," Dr. Dershwitz said. That is the level, he said, at which about 50 percent of people are conscious and 50 percent are unconscious.

He said he needed more information about how the autopsies were conducted. "The level of 6.5 for heart blood may or may not have been obtained and processed in a state-of-the-art way," he said. "Until we know, that number is just uninterpretable."

Executions in two other states have also raised concerns. Autopsies were conducted by state medical examiners after 23 executions in South Carolina and 11 in North Carolina. Under Dr. Dershwitz's standards, the Kentucky inmates' lawyers say, there was a 50 percent or greater chance that eight of the condemned men were conscious throughout their executions. In one of those cases, the likelihood was 90 percent. In four, it was 100 percent.

Dr. Dershwitz noted that the drug is typically put into 500 milligram syringes, with four needed for the required two grams.

"One of the possibilities is that instead of injecting four of these syringes they injected one," he said. Some legal experts say the debate over lethal injections misses a crucial point - that some punishment is meant to be painful.

"Is there something short of torture - a painful death - that can be acceptable morally and constitutional?" asked Robert Blecker, a professor at New York Law School. "My answer is yes. Where the condemned has intentionally inflicted pain, the condemned deserves a quick but painful death."

Whatever the reason for the low barbiturate levels in Mr. Harper's blood, opponents of the death penalty say the three-chemical combination is needlessly complicated and risky.

Veterinarians, by contrast, typically euthanize animals with a single large dose of a longer-acting barbiturate called sodium pentobarbital.

Susan Balliet, who also represents Mr. Baze and Mr. Bowling, along with a third lawyer, David M. Barron, refused to say whether the veterinary method was more humane.

"It's not our job to try to figure out how to kill our clients," Ms. Balliet said. "If they come up with something that is not cruel and unusual punishment under the Eighth Amendment, we will settle this lawsuit."

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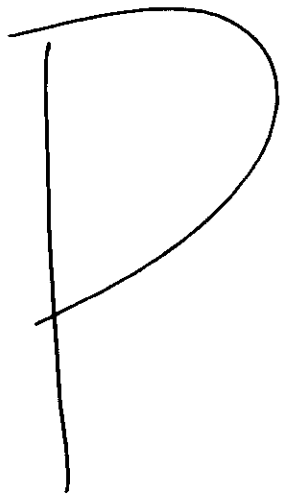

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1989 WL 2740680

Houston Chronicle

Saturday, May 27, 1989

B

Wrap-up

Witnesses to an execution

Kathy Fair, Houston Chronicle Huntsville Bureau Staff

WATCHING the state execute her client was the hardest thing Houston attorney Karen Zellars said she has ever had to do.

As she watched Stephen A. McCoy receive his lethal injection early Wednesday for the 1981 rape and strangulation of Houston teen-ager Cynthia Darlene Johnson, he winked at Ms. Zellars - a signal the two had worked out ahead of time to indicate he was ready to go.

Shortly afterward, though, McCoy began gagging and coughing deeply, his back arching off the gurney in the death chamber at the Huntsville ''Walls" Unit of the Texas Department of Corrections. He breathed a deep, long moan, closed his eyes and stopped breathing.

The normal solitude of the death chamber was shattered then, when Robert Hurst, a reporter for Houston radio station KTRH, witnessing the execution, fainted, crashing into one of four other media witnesses.

That, Ms. Zellars said, is when she nearly lost control herself.

''When he looked at me I felt a purpose there," she said. ''He winked at me and that was our signal. I stayed with him until the first violent heave. (His reaction) was more violent than I had expected. Then I heard the choking.

''The next thing I realized, everybody was gasping. I had no idea what it was. I really felt we were going to have a chain reaction. Y'all almost lost me when he went down," she said, referring to Hurst.

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It was the first time a witness had fainted at an **execution** since they were resumed in 1982, and one of the most violent reactions from an inmate, according to one veteran **execution** reporter, Associated Press' Mike Graczyk.

Even Attorney General Jim Mattox, who also witnessed McCoy's death, commented on the prisoner's reaction.

''This **execution** differed only in that the inmate seemed to have had a somewhat stronger reaction," he said. ''The drugs might have been administered in a heavier dose or more rapidly."

Despite McCoy's reaction, Mattox said he did not doubt the appropriateness of McCoy's punishment.

''There was no remorse, no drugs, no alcohol, no real explanation for the violence except they were just mean," Mattox said of McCoy and his two co-defendants, James E. Paster, 43, and Gary LeBlanc, 42.

''This is one of those cases where it's difficult to have any compassion for the individuals involved. It was a particularly heinous crime, with total disregard for humanity."

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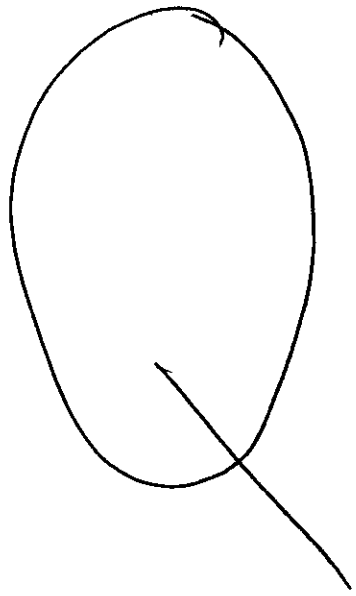


Lethal injection—the humane alternative?

By Matt Bean
Court TV

Lethal injection was first introduced in the U.S. as a humane alternative to other methods of execution. But although the procedure is most certainly more peaceful than execution by hanging, electrocution or the firing squad, it is not without its problems. Sometimes, the problem can be as simple as finding a vein for injection, or it can be as complicated as a chemical reaction gone awry. Here are examples of what happens when things do go wrong:

James Autrey; March 14, 1984, Texas
James Autrey was fully conscious and complaining of pain for much of the 10 minutes it took for him to die after the chemicals were injected. The IV catheters clogged because the first chemical, sodium pentathol, reacted with the second chemical, sodium pancurate, to form a solid. This reduced the flow of chemicals into Autrey's bloodstream and prolonged his consciousness, as well as the time until his death. Also, the needle for the catheter may not have been properly inserted into the vein, causing Autrey intense pain when the chemicals entered the surrounding muscles.

Stephen Peter Morin: March 13, 1985, Texas
Execution technicians were unable to find a vein for 45 minutes. After trying both arms and legs they finally found one suitable for injection.

Randy Woolls: August 20, 1986, Texas
Woolls was a drug addict and had many collapsed veins. Technicians could not find a proper vein until Woolls offered them his help.

Elliot Johnson: June 24, 1987, Texas
Technicians took 35 minutes to find a vein for Johnson's catheter.

Raymond Landry: December 13, 1988, Texas
Two minutes after the first injection, Landry's catheter popped out of his vein and began spraying chemicals around the room. Execution technicians reinserted the catheter into Landry's vein after re-closing the curtain, and the execution continued. It took 24 minutes after the first injection of sodium pentathol for him to die.

Stephen McCoy: May 24, 1989, Texas
Stephen McCoy reacted violently to the drugs. His chest heaved, he gasped for air, and appeared to be choking. One witness fainted because of the scene, and crashed into another witness as he fell. The Texas attorney

have been administered in a heavier dose or more rapidly." One possibility is that the first chemical, sodium pentathol, might not have sedated McCoy enough so that when the second chemical, sodium pancurate began to act and cut off his breathing, he was conscious as he suffocated.

Charles Walker: September 12, 1990, Illinois
Illinois Department of Corrections officials ordered the viewing blinds closed five minutes after Walker's execution began. Walker's death was prolonged because of a kink in the catheter line.

Rickey Ray Rector: January 24, 1992, Arkansas
Technicians took more than 50 minutes to find a suitable vein for injection in Rector's arm. Witnesses, who were not allowed to view this part of the process, said they heard him moaning in pain. Rector reportedly tried to help the medical personnel find a vein, and just before technicians were prepared to "cut-down" with a knife through Rector's arm to find one, one in his right hand was finally discovered.

Robyn Lee Parks: March 10, 1992, Oklahoma
Parks reacted violently to the drugs. Two minutes after the drugs were administered, Parks' jaw, neck, and abdomen muscles began to spasm for almost a minute. Parks gasped, and appeared to choke until dying eleven minutes after the drugs were first administered. A reporter described the execution as "scary and ugly."

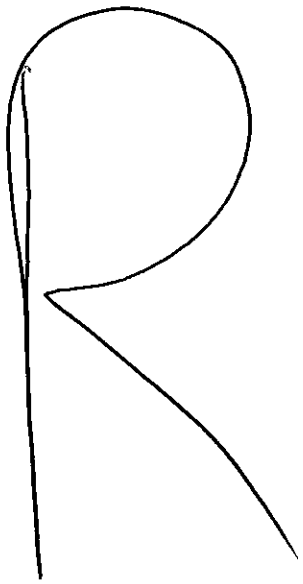
Billy Wayne White: April 23, 1992, Texas
Technicians took almost 50 minutes to locate a suitable vein. White had to assist them.

Justin Lee May: May 7, 1992, Texas
Justin Lee May gasped, coughed and "reared against his leather restraints" as the drugs flowed into his bloodstream. When he finally stopped breathing, his eyes and mouth remained open. According to Robert Wernsman, a reporter for the Huntsville newspaper "The Item," May gasped, coughed and reared against his heavy leather restraints, coughing once again before his body froze. Associated Press reporter Michael Graczyk wrote "He went into a coughing spasm, groaned and gasped, lifted his head from the death chamber gurney and would have arched his back if he had not been belted down. After he stopped breathing, his eyes and mouth remained open."

John Wayne Gacy: May 10, 1994, Illinois
John Wayne Gacy, the serial killer who tortured and murdered 33 young men and boys in the 1970s, was executed by lethal injection at the Stateville penitentiary in Joliet, Illinois. After the injection began, the catheter in Gacy's arm was clogged when the first two drugs reacted. The curtains were closed so witnesses would not see the clogged tube being

Emmitt Foster: May 3, 1995, Missouri
Emmitt Foster's death was a protracted and painful one because, according to the coroner, the leather straps that bound him to the gurney were too tight to allow blood to flow freely through his system. He was not pronounced dead until 30 minutes after the injection began. Three minutes later, the curtains were re-opened to the witnesses.

Michael Eugene Elkins: 1997, South Carolina
South Carolina took an hour to find a suitable vein for injection in Elkins' neck.



DECLARATION OF MARK DERSHWITZ, M.D., Ph.D.

I, Mark Dershwitz, M.D., Ph.D., hereby declare as follows:

1. I am a physician and also have a Ph.D. in pharmacology. A true and accurate copy of my curriculum vitae is attached as Exhibit A. I am licensed to practice medicine in the states of Massachusetts and Maine. I am currently an anesthesiologist at the University of Massachusetts and I am certified by the American Board of Anesthesiology. I am currently Professor of Anesthesiology and Biochemistry and Molecular Pharmacology at the University of Massachusetts.

2. I have done extensive research and written numerous review articles and research papers on the use of anesthetics and I regularly practice medicine in that capacity. My research includes the study of the pharmacodynamics and the pharmacokinetics of drugs. Pharmacokinetics is the study of the time course of a drug, while pharmacodynamics refers to the effects of a drug.

3. Prior to my current appointment at the University of Massachusetts, I have been an Instructor, Assistant Professor and Associate Professor at Harvard Medical School. I have testified as an expert witness concerning the pharmacokinetics and/or pharmacodynamics of anesthetic medications and other medications. I have testified in court as an expert witness on seven occasions. I have given eleven depositions as an expert witness.

4. I have been requested by the California Attorney General's Office to render an expert opinion concerning the effects of administering thiopental sodium, pancuronium bromide and potassium chloride with respect to California's procedures for executing prisoners by lethal injection. While California's execution protocol references "Sodium Pentothal," it is the same substance as thiopental sodium. Accordingly, all discussion in my declaration relating to thiopental sodium references the anesthetic drug being used by California in its execution protocol. I understand that California uses the following procedures for administering thiopental sodium and other drugs before the execution of condemned prisoners:

The syringes containing the drugs are prepared and loaded prior to the inmate being moved into the chamber. The drugs are prepared and loaded in the following order: (a) Two

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syringes, each containing 20 mL of sterile normal saline, with the syringes being labeled "NS"; (b) Three syringes, each containing 50 mEq of potassium chloride in 25 mL, with the syringes being labeled "3"; (c) Three syringes each containing 50 mg of pancuronium bromide (Pavulon) in 50 mL, with the syringes being labeled "2"; (d) four syringes each containing 1.25 grams of thiopental sodium in a volume of 50 mL. The thiopental sodium, being a federally controlled drug, shall be prepared last, when it appears that it shall actually be used. These syringes are labeled "1". Pre-medication with Valium, or its equivalent, is available to the inmate if requested and approved by the Health Care Manager. It is noted that three syringes of pancuronium bromide and potassium chloride are prepared, with two being used, and one extra of each prepared as "stand-bys" in the event one is dropped in handling during the injection procedure.

A primary injection site is established by means of an intravenous catheter inserted into a usable vein, and an infusion of normal saline solution is thereby initiated. A second infusion of normal saline solution is likewise established at a secondary site, to be used in the event that blockage or malfunction occurs at the primary site. The first chemical administered is 5 grams of thiopental sodium, which is immediately followed by a saline flush. The second chemical is 100 mg of pancuronium bromide, and it is also followed immediately by a saline flush. The third chemical is 100 mEq of potassium chloride. The chemicals are administered successively, in the order listed, with the second chemical introduced immediately after injection of the first chemical and saline flush is completed, and the third chemical introduced immediately after injection of the second chemical and saline flush is completed.

5. I have performed a detailed pharmacokinetic and pharmacodynamic analysis of the effects of a 5-gram dose of thiopental sodium given to an average man with a mass of 80 kilograms or about 176 pounds. It is my opinion, to a reasonable degree of medical certainty, that a condemned inmate who is administered five grams of thiopental sodium will be rendered unconscious, and not experience pain for the time period necessary to complete the execution. The following discussion will quantitate the miniscule probability that the person could be conscious during the period of time that elapses between the administration of thiopental sodium

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and the person's death. Even in persons of greater size or with inherent drug tolerance (due, for example, to the prior administration of therapeutic medications) the listed probabilities would not be altered in a meaningful way.

6. From my pharmacokinetic analysis I have generated a graph, attached as Exhibit B. This pharmacokinetic graph shows the concentration of thiopental in the blood in an average man as a function of time. In Exhibit B, the time course considered is two hundred minutes. In Exhibit B, the y-axis is the concentration of thiopental in blood measured in mcg/mL (micrograms or millionths of a gram per milliliter). As shown in Exhibit B. after the administration of five grams of thiopental sodium, the blood concentration of thiopental would be about 240 mcg/mL about one minute after the injection begins, falling to about 56.8 mcg/mL after 20 minutes and to about 13.5 mcg/mL after 200 minutes. It should be noted that twenty minutes is more than twice as long as any prior execution in California has required using the procedure described herein. The blood concentration of thiopental at which 50% of people are conscious and 50% are unconscious is 7 mcg/mL; about 820 minutes must elapse until this point is reached.

7. From my pharmacodynamic analysis, I have generated a graph, attached as Exhibit C. This pharmacodynamic graph shows the probability that an average man will be conscious as a function of the blood concentration of thiopental. In other words, the graph shows the likelihood of consciousness in the presence of varying blood concentrations of thiopental. The graph shows that it is extraordinarily unlikely that someone will remain conscious during the hour following the administration of five grams of thiopental.

8. It is my opinion to a reasonable degree of medical certainty that thiopental sodium given as described above would render most people unconscious within sixty seconds from the time of the start of administration. By the time all 200 mL of thiopental sodium solution are injected, it is my further opinion, to a reasonable degree of medical certainty, that over 99.999999999999% of the population would be unconscious. Furthermore, this dose of thiopental sodium will cause virtually all persons to stop breathing within a minute of drug administration. Thus, although the subsequent administration of pancuronium bromide, a

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paralytic agent, would have the effect of paralyzing the person and preventing him from being able to breathe, virtually every person given five grams of thiopental sodium will have stopped breathing prior to the administration of pancuronium bromide. Thus, even in the absence of the administration of pancuronium bromide and potassium chloride, the administration of five grams of thiopental sodium by itself would be lethal in almost everyone.

9. It is my opinion, to a reasonable degree of medical certainty, that there is approximately a 0.000000006% probability that a condemned inmate give this dose would be conscious, and able to experience pain, after a period of five minutes.

10. It is my opinion, to a reasonable degree of medical certainty, that there is approximately a 0.0000015% probability that a condemned inmate given this dose would be conscious, and able to experience pain after a period of ten minutes.

11. It is my opinion, to a reasonable degree of medical certainty, that there is approximately a 0.000021% probability that a condemned inmate given this dose would be conscious, and able to experience pain after a period of 30 minutes.

12. It is my opinion, to a reasonable degree of medical certainty, that there is approximately a 0.011% probability that a condemned inmate given this dose would be conscious, and able to experience pain, after a period of 100 minutes.

13. Finally, it is my opinion, based upon a reasonable degree of medical certainty, the administration of five grams of thiopental sodium would render most people unconscious for a period of in excess of 13 hours.

14. Therefore, it is my opinion to a reasonable degree of medical certainty that there is an exceedingly small risk that a condemned inmate under these circumstances would experience any pain associated with the infusion of lethal doses of pancuronium bromide and potassium chloride.

15. I have reviewed the declaration of Dr. Mark Heath, filed in the Federal Court in California regarding condemned inmate Kevin Cooper. I note that Dr. Heath's published works focus on the molecular mechanisms of pain. It does not appear that Dr. Heath has particular expertise with respect to the pharmodynamics and pharmacokinetics of anesthetic medications.

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In other words, Dr. Heath has no apparent expertise in the time course of a medication's effect, which in my view is the primary medical and scientific issue raised in this case. While all anesthesiologists should be familiar with the use of thiopental sodium, pancuronium bromide and potassium chloride, my primary research interest throughout my career in anesthesiology has been the study of the time course of the effects of anesthetic medications.

16. I have reviewed the declaration of Dr. Corey Weinstein filed in the Federal Court in California regarding condemned inmate Kevin Cooper. Dr. Weinstein appears to practice internal medicine, and nothing indicates any particular expertise relating to anesthesiology. Dr. Weinstein offers opinions that are similar to those expressed by Dr. Heath, and accordingly, my discussion regarding why Dr. Heath's opinions are scientifically erroneous apply equally to Dr. Weinstein's opinions.

17. Paragraph 21 of Dr. Heath's declaration states that "[a]s with most drugs, a person's body composition (size, weight, and drug tolerance), and any medications they may have taken, cause the inmate to react differently to the chemicals. Thus, some prisoners may need a higher concentration of sodium pentothal than others before losing consciousness. California's failure to account for each inmate's physiological attributes increases the probability that the inmate will not be unconscious when the other chemicals are administered causing the inmate to suffer an excruciatingly painful death." It is my opinion, to a reasonable degree of medical certainty, that a 5-gram dose of thiopental sodium administered as described above is a dose sufficient to induce unconsciousness for a period well in excess of the time necessary to complete an execution. When thiopental sodium is commonly used for general anesthesia in surgery, it is normally administered in a dose of 300 to 400 milligrams. Five grams, the amount of thiopental sodium used in California's executions, is at least 12.5 times the commonly used surgical dosage.

18. Paragraph 23 of Dr. Heath's declaration states that the "failure to require a continuous infusion of sodium pentothal places the condemned inmate at a needless and significant risk for the conscious experience of paralysis during the excruciating pain of both suffocation and the intravenous injection of potassium chloride." This statement is scientifically

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erroneous. It is my opinion, to a reasonable degree of medical certainty, that continuous infusion would not significantly decrease the already exceedingly small risk that a condemned inmate would regain consciousness. In fact, the difference between the procedure outlined above for administering thiopental sodium versus a continuous infusion of 500 milligrams per minute for ten minutes is negligible.

19. Paragraph 15 of Dr. Heath's declaration states that pancuronium bromide, as used in executions, "nullifies the ability of witnesses to discern whether or not the condemned prisoner is experiencing a peaceful or agonizing death." This statement is scientifically erroneous. The inmate would not experience any pain or discomfort because he has been rendered unconscious by thiopental sodium. Pancuronium bromide acts to stop an inmate's breathing. It would also act to prevent the manifestations of seizure activity. Such seizures occur commonly after a person's heart stops beating. Thus, the absence of pancuronium bromide may be erroneously interpreted by the lay observer as pain or discomfort. In my opinion, to a reasonable degree of medical certainty, California's use of thiopental sodium before, and in combination with, pancuronium bromide and potassium chloride, results in an inmate's rapid and painless death.

20. Paragraph 18 of Dr. Heath's declaration states that thiopental sodium has a very "short shelf life in liquid form," and therefore, this results in a "major concern" relating to its use. It is my opinion, to a reasonable degree of medical certainty, that preparation of a 2.5% solution of thiopental sodium within one hour of its use presents no concern as to its stability and effectiveness when used. It is my further opinion that such a concentration should remain stable in liquid form for at least twenty-four hours at room temperature after preparation.

21. I am informed that California uses licensed registered or vocational nurses to prepare and insert the intravenous catheters. It is my opinion, to a reasonable degree of medical

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Feb-03-04 16:08 Dr. Mark Dershwitz 508 334 7265 P.01

certainty, that registered or vocational nurses licensed by California would be competent to prepare and insert such intravenous catheters.

Executed under penalty of perjury under the laws of the United States, on this third day of February, 2004, at Worcester, Massachusetts.

Dated: 3 February 2004

MARK DERSHWITZ, M.D., Ph.D.

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CURRICULUM VITAE
(prepared 5 January 2004)

NAME: Mark Dershwitz

ADDRESS: 33 Wildwood Drive
Sherborn, MA 01770
Telephone (508) 651-1120

PLACE OF BIRTH: Dearborn, MI

EDUCATION:

1974	B.A. cum laude Chemistry, with Departmental Honors Oakland University, Rochester, MI 48063
1982	Ph.D. (Pharmacology) Northwestern University, Evanston, IL 60201
1982	M.D. Northwestern University, Chicago, IL 60611

POSTDOCTORAL TRAINING:

INTERNSHIPS AND RESIDENCIES:

1983	Transitional Resident Carney Hospital, Boston, MA 02124
1984-1986	Resident in Anesthesia Massachusetts General Hospital, Boston, MA 02114

RESEARCH FELLOWSHIPS:

1986-1988	Department of Anesthesia Massachusetts General Hospital, Boston, MA 02114

LICENSURE AND CERTIFICATION:

1984	Massachusetts
1987	American Board of Anesthesiology
1990	Maine

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ACADEMIC APPOINTMENTS:

1977-1979	Lecturer in Pharmacology, Illinois College of Podiatric Medicine
1979-1982	Lecturer in Pharmacology, Illinois College of Optometry
1984-1987	Clinical Fellow in Anæsthesia, Harvard Medical School
1987-1990	Instructor in Anæsthesia, Harvard Medical School
1990-1997	Assistant Professor of Anæsthesia, Harvard Medical School
1997-2000	Associate Professor of Anæsthesia, Harvard Medical School
2000-	Professor and Academic Vice Chair of Anesthesiology Professor of Biochemistry & Molecular Pharmacology University of Massachusetts Medical School

HOSPITAL APPOINTMENTS:

1986-1990	Assistant in Anesthesia, Massachusetts General Hospital
1990-1996	Assistant Anesthetist, Massachusetts General Hospital
1996-2000	Associate Anesthetist, Massachusetts General Hospital
2000-2002	Clinical Associate in Anesthesia, Massachusetts General Hospital
2000-	Anesthesiologist, UMass Memorial Medical Center

AWARDS AND HONORS:

1972	Michigan Higher Education Association Scholarship
1972-1974	Oakland University Competitive Scholarship
1973-1974	National Merit Scholarship
1979	American Society for Pharmacology and Experimental Therapeutics Travel Award
1981	Biophysical Society Samuel A. Talbot Award
1982	Alpha Omega Alpha Research Award
1986-1988	NIH National Research Service Award
2001	Distinguished Alumnus Award Oakland University Department of Chemistry
2002-2003	Outstanding Teacher Award University of Massachusetts Department of Anesthesiology
2003	Outstanding Medical Educator Award University of Massachusetts Medical School
2004-	Listed in Who's Who in America

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MEMBERSHIPS IN PROFESSIONAL SOCIETIES:

Association of University Anesthesiologists
American Society of Anesthesiologists
American Society for Pharmacology and Experimental Therapeutics
American Society for Clinical Pharmacology and Therapeutics
International Anesthesia Research Society
Biophysical Society
International Society for Anesthetic Pharmacology
Massachusetts Medical Society
Anesthesia History Association

RESEARCH INTERESTS:

Intravenous anesthetics
Antiemetics
Monitoring depth of anesthesia
Malignant hyperthermia

RESEARCH FUNDING:

1986-1988	National Institutes of Health GM11656 (PI) The role of glutathione in malignant hyperthermia
1988-1989	Anaquest, Inc. (PI) Comparison of the sedative effects of midazolam and butorphanol
1989-1990	Glaxo, Inc. (Co-I) A randomized, double-blind comparison of intravenous ondansetron and placebo in the prevention of postoperative nausea and vomiting in female patients undergoing abdominal gynecological surgical procedures
1990-1991	Glaxo, Inc. (Co-I) A randomized, double-blind, placebo-controlled study of the effects of two dose levels of intravenous ondansetron on respiratory depression induced by alfentanil in healthy male volunteers
1991-1992	Glaxo, Inc. (Co-I) A dose finding and comparative trial of GI87084B and alfentanil for anesthesia maintenance
1992-1993	Glaxo, Inc. (Co-I) Pharmacokinetics and pharmacodynamics of GI87084B in subjects with hepatic impairment compared to subjects with normal hepatic function

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Exhibit A

1993-1994	Marion Merrell Dow, Inc. (PI) A randomized, double-blind, placebo-controlled, dose response trial to assess single dose intravenous dolasetron mesylate in patients experiencing postoperative nausea and vomiting
1993-1994	Marion Merrell Dow, Inc. (PI) A randomized, double-blind, placebo-controlled, dose response trial to assess single dose intravenous dolasetron mesylate in preventing postoperative nausea and vomiting
1993-1994	Glaxo, Inc. (Co-I) Pharmacokinetics and pharmacodynamics of GI87084B in subjects with renal impairment compared to subjects with normal renal function
1995-1996	Glaxo, Inc. (PI) A randomized, double-blind, dose-response study of ondansetron in the prevention of postoperative nausea and vomiting in inpatients
1996-1997	Aradigm Corporation (Co-I) Comparison of the pharmacokinetics and pharmacodynamics of inhaled versus intravenous morphine sulfate in healthy volunteers
1999-2000	Searle, Inc. Clinical Protocol for a Double-blind, Placebo-Controlled, Randomized Study of the Efficacy of Parecoxib 20 mg IV and Parecoxib 40 mg IV Given Postoperatively to Determine Narcotic-Sparing Effectiveness in a Post-General Surgery Pain Model

CLINICAL RESPONSIBILITIES:

1986-1988	Attending Anesthesiologist (20% clinical responsibility) Massachusetts General Hospital
1988-2000	Attending Anesthesiologist (50% clinical responsibility) Massachusetts General Hospital
1994-1997	Team Leader, East-West Anesthesia Service Massachusetts General Hospital
1997-2000	Team Leader, General Surgery Anesthesia Service Massachusetts General Hospital
2000-	Attending Anesthesiologist (50% clinical responsibility) UMass Memorial Medical Center

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TEACHING EXPERIENCE:

1976-1980	Dental Hygiene Pharmacology Northwestern University Dental School 5 hours and Course Director
1977-1979	Medical Pharmacology Illinois College of Podiatric Medicine 22 hours and Course Director
1978-1981	Dental Pharmacology Northwestern University Dental School 3 hours
1979-1982	General Pharmacology Illinois College of Optometry 20 hours and Course Director
1979-1982	Ocular Pharmacology Illinois College of Optometry 10 hours and Course Director
1980-1981	Nursing Pharmacology, Northwestern University 5 hours
1994-	HST 150 Introduction to Pharmacology Harvard-MIT Program in Health, Science and Technology 4 hours
1996-	Harvard Anesthesia Review and Update 1-2 hrs
2001-	Medical Pharmacology University of Massachusetts Medical School 11-14 hrs

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Exhibit A

VISITING PROFESSORSHIPS:

April 6-7, 1994:	University of Pennsylvania
May 17-18, 1994:	University of North Carolina at Chapel Hill
Sept. 20-22, 1994:	State University of New York at Stony Brook
April 5-6, 1995:	Albany Medical College
May 8-10, 1997:	University of Texas Southwestern Medical Center
Dec. 8-9, 1998	Temple University
Dec. 16-17, 1998	University of Pittsburgh

COMMITTEE MEMBERSHIPS:

LOCAL:

2000 -	Pharmacy and Therapeutics Committee UMass Memorial Medical Center
2001 -	Physician Health and Well-Being Committee UMass Memorial Medical Center

NATIONAL:

1999 -2002	Subcommittee on Anesthetic Action and Biochemistry American Society of Anesthesiologists
2001 -	Subcommittee on Drug Disposition American Society of Anesthesiologists

BIBLIOGRAPHY:

ORIGINAL REPORTS:

1. Novak RF, Dershwitz M, Novak FC. The interaction of benzene with human hemoglobin as studied by ^1H Fourier transform NMR spectroscopy. **Biochem. Biophys. Res. Commun.** 1978;82:634-40.

2. Novak RF, Dershwitz M, Novak FC. Characterization of the interaction of the aromatic hydrocarbons benzene and toluene with human hemoglobin. **Mol. Pharmacol.** 1979;16:1046-58.

3. Dershwitz M, Novak RF. Lack of inhibition of glutathione reductase by unnitrated derivatives of nitrofurantoin. **Biochem. Biophys. Res. Commun.** 1980;92:1313-19.

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4. Dershwitz M, Novak RF. Lack of inhibition of glutathione reductase by anthracycline antibiotics. **Biochem. Pharmacol.** 1981;30:676-8.

5. Dershwitz M, Novak RF. Generation of superoxide anion via the interaction of nitrofurantoin with human hemoglobin. **J. Biol. Chem.** 1982;257:75-9.

6. Dershwitz M, Novak RF. Studies on the mechanism of nitrofurantoin-mediated red cell toxicity. **J. Pharm. Exp. Ther.** 1982;222:430-4.

7. Dershwitz M, Ts'ao CH, Novak RF. Metabolic and morphologic effects of the antimicrobial agent nitrofurantoin on human erythrocytes in vitro. **Biochem. Pharmacol.** 1985;34:1963-70.

8. Dershwitz M, Sréter FA, Ryan JF. Ketamine does not trigger malignant hyperthermia in susceptible swine. **Anesth. Analg.** 1989;69:501-3.

9. Dershwitz M, Ryan JF, Guralnick W. Safety of amide local anesthetics in patients susceptible to malignant hyperthermia. **J. Am. Dent. Assoc.** 1989;118:276-80.

10. Dershwitz M, Sréter FA. Azumolene reverses episodes of malignant hyperthermia in susceptible swine. **Anesth. Analg.** 1990;70:253-5.

11. Dershwitz M, Rosow CE, Di Biase PM, Zaslavsky A. Comparison of the sedative effects of butorphanol and midazolam. **Anesthesiology** 1991;74:717-24.

12. Dershwitz M, Sherman EP. Acute myocardial infarction symptoms masked by epidural morphine? **J. Clin. Anesth.** 1991;3:146-8.

13. Dershwitz M, Rosow CE, Di Biase PM, Joslyn AF, Sanderson PE. Ondansetron is effective in decreasing postoperative nausea and vomiting. **Clin. Pharmacol. Ther.** 1992;52:96-101.

14. Dershwitz M, Di Biase PM, Rosow CE, Wilson RS, Sanderson PE, Joslyn AF. Ondansetron does not affect alfentanil-induced ventilatory depression or sedation. **Anesthesiology** 1992;77:447-52.

15. McKenzie R, Sharifi-Azad S, Dershwitz M, Miguel R, Joslyn A, Tantisira B, Rosenblum F, Rosow C, Downs J, Bowie J, Odell S, Lessin J, Di Biase P, Nations M. A randomized, double-blind pilot study examining the use of intravenous ondansetron in the prevention of postoperative nausea and vomiting in female inpatients. **J. Clin. Anesth.** 1993;5:30-6.

16. Dershwitz M, Randel GI, Rosow CE, Fragen RJ, Connors PM, Librojo ES, Shaw DL, Peng AW, Jamerson BD. Initial clinical experience with remifentanil, a new opioid metabolized by esterases. **Anesth. Analg.** 1995; 81:619-23.

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Exhibit A

17. Dershwitz M, Hoke JF, Rosow CE, Michalowski P, Connors PM, Muir KT, Dienstag JL. Pharmacokinetics and pharmacodynamics of remifentanil in volunteer subjects with severe liver disease. **Anesthesiology** 1996; 84:812-20.

18. Dershwitz M, Rosow CE. The pharmacokinetics and pharmacodynamics of remifentanil in volunteers with severe hepatic or renal dysfunction. **J. Clin. Anesth.** 1996; 8:88S-90S.

19. Kovac AL, Scuderi PE, Boerner TF, Chelly JE, Goldberg ME, Hantler CB, Hahne WF, Brown RA, Dolasetron Mesylate PONV Treatment Study group. Treatment of postoperative nausea and vomiting with single intravenous doses of dolasetron mesylate: a multicenter trial. **Anesth Analg** 1997; 85:546-52.

20. Hoke JF, Shlugman D, Dershwitz M, Michalowski P, Malthouse-Dufore S, Connors PM, Marten D, Rosow CE, Muir KT, Rubin N, Glass PSA. Pharmacokinetics and pharmacodynamics of remifentanil in subjects with renal failure compared to healthy volunteers. **Anesthesiology** 1997; 87:533-41.

21. Gan TJ, Glass PS, Windsor A, Payne F, Rosow C, Sebel P, Manberg P, BIS Utility Study Group. Bispectral index monitoring allows faster emergence and improved recovery from propofol, alfentanil, and nitrous oxide anesthesia. **Anesthesiology** 1997; 87:808-15.

22. Kearse LA, Rosow C, Zaslavsky A, Connors P, Dershwitz M, Denman W. Bispectral analysis of the electroencephalogram predicts conscious processing of information during propofol sedation and hypnosis. **Anesthesiology** 1998; 88:25-34.

23. Dershwitz M, Conant JA, Chang YC, Rosow CE, Connors PM. A randomized double-blind dose-response study of ondansetron in the prevention of postoperative nausea and vomiting. **J Clin Anesth** 1998; 10:314-20.

24. Philip BK, Pearman MH, Kovac AL, Chelly JE, Wetchler BV, McKenzie R, Monk TG, Dershwitz M, Mingus M, Sung YF, Hahne WF, Brown RA, Dolasetron PONV Prevention Study Group. Dolasetron for the prevention of postoperative nausea and vomiting following outpatient surgery with general anaesthesia: a randomized, placebo-controlled study. **Eur J Anaesthesiol** 2000; 17:23-32.

25. Philip BK, McLeskey CH, Chelly JE, McKenzie R, Kovac AL, Diemunsch P, DuBois DM, Dolasetron Prophylaxis Study Group. Pooled analysis of three large clinical trials to determine the optimal dose of dolasetron mesylate needed to prevent postoperative nausea and vomiting. **J Clin Anesth** 2000; 12:1-8. (erratum published in **J Clin Anesth** 2000; 12:577-78).

26. Dershwitz M, Walsh JL, Morishige RJ, Connors PM, Rubsamen RM, Shafer, SL, Rosow C. Pharmacokinetics and pharmacodynamics of inhaled versus intravenous morphine in healthy volunteers. **Anesthesiology** 2000; 93:619-28.

R-15

27. Dershwitz M, Michalowski P, Chang YC, Rosow CE, Conlay LA. Postoperative nausea and vomiting following total intravenous anesthesia with propofol and remifentanil or alfentanil. How important is the opioid? J Clin Anesth 2002; 14:275-78.

28. Dershwitz M. Droperidol: should the black box be light gray? J Clin Anesth 2002; 14:598-603.

29. Dershwitz M. There should be a threshold dose for the FDA black-box warning on droperidol (letter). Anesth Analg 2003; 97:1542-3.

PROCEEDINGS OF MEETINGS:

1. Kharasch ED, Dershwitz M, Novak RF. Differential hemeprotein involvement in microsomal and red cell lysate quinone and nitro group reduction. In: Sato R, Kato R, eds. Microsomes, Drug Oxidations, and Drug Toxicity. New York: Wiley Interscience, 1982:237-8.

BOOKS:

1. Stelmack TR, Dershwitz M. Manual for the Use of Pharmaceutical Agents for Ocular Diagnostic Purposes, ICO Press, Chicago, 1980.

2. Dershwitz M, ed. The MGH Board Review of Anesthesiology. 4th ed. Norwalk, CT: Appleton & Lange, 1994.

3. Dershwitz M, ed. The MGH Board Review of Anesthesiology. 5th ed. Norwalk, CT: Appleton & Lange, 1998.

CHAPTERS IN BOOKS:

1. Dershwitz M, Ten Eick RE. Pharmacology. In: National Boards Examination Review for Part I, Basic Sciences. Garden City, NY: Medical Examination Publishing Co., 1981.

2. Dershwitz M. Pharmacology. In: National Boards Examination Review for Part I, Basic Sciences. New Hyde Park, NY: Medical Examination Publishing Co., 1984.

3. Dershwitz M. Pharmacology. In: National Boards Examination Review for Part I, Basic Sciences. New York: Elsevier Science Publishing Co., Inc., 1987.

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Exhibit A

4. Dershwitz M. Local anesthetics. In: Firestone LL, Lebowitz PW, Cook CE, eds. **Clinical Anesthesia Procedures of the Massachusetts General Hospital,** 3rd ed. Boston: Little, Brown and Co., 1988.

5. Dershwitz M. Antiemetics. In: Bowdle TA, Horita A, Kharasch ED, eds. **The Pharmacological Basis of Anesthesia.** New York: Churchill Livingstone, 1994.

6. Dershwitz M. Antiemetic drugs. In: White PF, ed. **Ambulatory Anesthesia and Surgery.** London: W.B. Saunders Co., 1997.

7. Rosow CE and Dershwitz M. Opioid analgetics. In: Longnecker DE, Tinker JH, Morgan GE, eds. **Principles and Practice of Anesthesiology,** 2nd ed. Philadelphia: Mosby-Year Book, Inc., 1997.

8. Stambach A, Dershwitz M. Intravenous and inhalation anesthetics. In: Hurford WE, ed. **Clinical Anesthesia Procedures of the Massachusetts General Hospital,** 5th ed. Philadelphia: Lippincott-Raven, 1998.

9. Dershwitz M. Agents for general anesthesia. In: Schirmer BD, Rattner DW, eds. **Ambulatory Surgery.** Philadelphia: W.B. Saunders Co., 1998.

10. Dershwitz M. Intravenous and inhalation anesthetics. In: Hurford WE, ed. **Clinical Anesthesia Procedures of the Massachusetts General Hospital,** 6th ed. Philadelphia: Lippincott Williams and Wilkins, 2002.

11. Dershwitz M, Landow L, Joshi-Ryzewicz W. Anesthesia for bedside procedures. In: Irwin RS, Cerra FB, Rippe JM, eds. **Irwin and Rippe's Intensive Care Medicine,** 5th ed. Philadelphia: Lippincott, Williams, and Wilkins, 2003.

REVIEWS AND EDUCATIONAL MATERIALS:

1. Dershwitz M. Advances in antiemetic therapy. **Anesth. Clinics North Amer.** 1994;12:119-32.

2. Dershwitz M. How can the costs of anesthesia be decreased? **Intravenous Anesth. Today** 1994;1(3):4-9.

3. Dershwitz M. 5-HT_3 antagonists in postoperative nausea and vomiting. **Ambulatory Anesth.** 1995; 10(1):9-11.

4. Ballantyne JC, Dershwitz M. The pharmacology of non-steroidal anti-inflammatory drugs for acute pain. **Curr. Opin. Anaesthesiol.** 1995; 8:461-68.

5. Dershwitz M, Rosow CE. Remifentanil: a truly-short-acting opioid. **Semin. Anesth.** 1996; 15:88-96.

R-17

6. Dershwitz M, Rosow CE. Remifentanil: an opioid metabolized by esterases. Exp Opin Invest Drugs 1996; 5:1361-76.

7. Dershwitz M. Should we measure depth of anesthesia? Semin. Anesth. 2001; 20:246-56.

NON-PRINT MATERIALS:

1. Dershwitz M. Use of short-acting analgesia in surgery: achieving cost-effective care (videotape). Rancho Mirage, CA: Annenberg Center for Health Sciences, 1996.

2. Dershwitz M. General considerations (section editor). In: Bailin M. ed. Harvard Department of Anesthesia Electronic Library (CD-ROM). Philadelphia: Lippincott Williams & Wilkins, 2001.

3. Dershwitz M. Practical pharmacokinetics of intravenous anesthetics. In: Bailin M. ed. Harvard Department of Anesthesia Electronic Library (CD-ROM). Philadelphia: Lippincott Williams & Wilkins, 2001.

ABSTRACTS:

1. Bruer P, Cantarella J, Dershwitz M, Undy L, Young DC. Polarographic studies of copper (II) complexes of glycine peptides. Abstract #6, Anachem Society Meeting, Detroit, MI, 1976.

2. Dershwitz M, Novak RF. The interaction of nitrofurantoin with human hemoglobin. Fed. Proc. 1979;38:544.

3. Dershwitz M, Novak RF. Metabolic effects of nitrofurantoin on the human erythrocyte. The Pharmacologist 1979;21:170.

4. Dershwitz M, Novak RF. Depletion of erythrocyte adenosine-5'-triphosphate and reduced glutathione levels by nitrofurantoin and unnitrated derivatives. Fed. Proc. 1980;39:748.

5. Dershwitz M, Lack of inhibition of glutathione reductase by unnitrated derivatives of nitrofurantoin. Fed. Proc. 1980;39:1751.

6. Dershwitz M, Novak RF. Oxidation of human hemoglobin by nitrofurantoin. Biophys. J. 1981;33:81a.

7. Dershwitz M, Novak RF. The effects of ethyl isocyanide on nitrofurantoin-mediated depletion of red cell glutathione. Fed. Proc. 1981;40:667.

R-18 Exhibit A

8. Dershwitz M, Novak RF. Studies on the mechanism of nitrofurantoin-mediated red cell toxicity. **Eighth International Congress on Pharmacology**, Tokyo, Japan, 1981.

9. Kharasch ED, Dershwitz M, Novak RF. Differential hemeprotein involvement in microsomal and red cell lysate quinone and nitro group reduction. **Fifth International Symposium on Microsomes and Drug Oxidations**, Tokyo, Japan, 1981.

10. Dershwitz M, Novak RF. On the mechanism of nitrofurantoin-mediated red cell toxicity. **The Pharmacologist** 1981;23:211.

11. Dershwitz M, Novak RF. Generation of activated oxygen species in human red cells by nitrofurantoin. **Seventh International Biophysics Congress and Third Pan-American Biochemistry Congress**, Mexico City, Mexico, 1981.

12. Dershwitz M, Sréter FA. Substrate requirements for glutathione maintenance in pig red cells in vitro. **The Pharmacologist** 1987;29:210.

13. López JR, Dershwitz M, Sanchez V, Sréter FA. [K^+] and [Na^+] in malignant hyperthermia-susceptible swine. **Biophys. J.** 1988;53:609a.

14. Chang RJ, Dershwitz M, Sréter FA, Smilowitz H. Skeletal muscle from malignant hyperthermia-susceptible swine contains decreased levels of monoclonal antibody reactive dihydropyridine receptor. **The Pharmacologist** 1988;30:A88.

15. Kim DH, Lee YS, Sréter FA, Ohkisa T, Dershwitz M, Ikemoto N. Effects of azumolene on the kinetics of Ca release from normal and malignant hyperthermic sarcoplasmic reticulum. **Biophys. J.** 1990;57:497a.

16. Dershwitz M, Sréter FA. Reversal of malignant hyperthermia episodes by azumolene in susceptible swine. **Anesth. Analg.** 1990;70:S81.

17. Dershwitz M, Rosow CE, Di Biase PM, Zaslavsky A. Characterization of the sedative effects of butorphanol in humans. **The Pharmacologist** 1990;32:139.

18. Dershwitz M, Rosow CE, Di Biase PM, Joslyn AF, Sanderson PE. Prophylaxis of postoperative vomiting by ondansetron. **Clin. Pharm. Ther.** 1991;49:184.

19. Dershwitz M, Rosow CE, Di Biase PM, Joslyn AF, Sanderson PE. Ondansetron is effective in decreasing postoperative nausea and vomiting. **Jap. J. Anesthesiol.** 1991;40:S312.

20. Dershwitz M, Di Biase PM, Rosow CE, Wilson RS. Ondansetron does not affect alfentanil-induced ventilatory depression. **Anesthesiology** 1991;75:A321.

21. Nakamura H, deBros F, Roberts J, Dershwitz M, Sweet W, Poletti C, Philbin D. Plasma catecholamine concentrations before and after trigeminal rhizotomy: a clinical study. 5th International Symposium on Endocrinology in Anesthesia and Critical Care, Berlin, October, 1991.

R-19

22. Nakamura H, deBros F, Roberts J, Dershwitz M, Sweet W, Poletti C, Philbin D. Plasma catecholamine concentrations before and after trigeminal rhizotomy: a clinical study. **Anesth. Analg. 1992;74:S217.**

23. Dershwitz M, Randel G, Rosow CE, Fragen R, Di Biase PM, Librojo ES, Jamerson B, Shaw DL. Dose-response relationship of GI87084B, a new ultra-short acting opioid. **Anesthesiology 1992;77:A396.**

24. Dershwitz M, Rosow CE, Di Biase PM, Wilson RS. Ventilatory depression during and after a low dose alfentanil infusion in normal volunteers. **Anesthesiology 1992;77:A360.**

25. Dershwitz M, Rosow CE, Michałowski P, Connors PM, Hoke JF, Muir KT, Dienstag JL. Pharmacokinetics and pharmacodynamics of remifentanil in volunteer subjects with severe liver disease. Association of University Anesthesiologists Annual Meeting; Chicago, Illinois; May, 1994.

26. Dershwitz M, Rosow CE, Michałowski P, Connors PM, Hoke JF, Muir KT, Dienstag JL. Pharmacokinetics and pharmacodynamics of remifentanil in subjects with severe liver disease compared with normal subjects. **Anesthesiology 1994; 81:A377.**

27. Shlugman D, Dufore S, Dershwitz M, Michałowski P, Hoke J, Muir KT, Rosow C, Glass PSA. Respiratory effects of remifentanil in subjects with severe renal impairment compared to matched controls. **Anesthesiology 1994; 81:A1417.**

28. Hoke JF, Muir KT, Glass PSA, Shlugman D, Rosow CE, Dershwitz M, Michałowski P. Pharmacokinetics of remifentanil and its metabolite (GR90291) in subjects with renal disease. **Clin. Pharm. Ther. 1995; 57:148.**

29. Kovac A, Melson T, Graczyk S, Scuderi P, Watkins WD, MCPR44 Study Group. Treatment of postoperative nausea and vomiting with single doses of IV dolasetron: a multicenter trial. **Anesthesiology 1995; 83:A6.**

30. Kearse L, Rosow C, Connors P, Denman W, Dershwitz M. Propofol sedation/hypnosis and bispectral EEG analysis in volunteers. **Anesthesiology 1995; 83:A506.**

31. Kovac A, Chelly J, McKenzie R, Philip B, Pearman M, Brown R, MCPR45 Study Group. Multicenter intravenous dose response trial to assess the efficacy and safety of dolasetron mesylate in preventing postoperative nausea and vomiting. **Anesthesiology 1996; 85:A1.**

32. Dershwitz M, Conant JA, Rosow CE, Connors PM, Zaslavsky A. A dose-response study of ondansetron in preventing postoperative nausea and vomiting in female inpatients. **Anesthesiology 1996; 85:A331.**

33. Rosow CE, Connors PM, Hennessy D, Rosow D, Dershwitz M, Shyu WC, Vachharajani N. Bioavailability of nasal butorphanol. **Anesthesiology 1996; 85:A314.**

R-20 Exhibit A

34. Denman WT, Rosow D, Hennessy D, Dershwitz M, Rosow C. Miotic effects of alfentanil, and fentanyl occur at extremely low doses. **The Pharmacologist 1997; 39:109.**

35. Dershwitz M, Morishige RJ, Walsh JL, Rodriguez-Paz JM, Maarschalk LA, Rubsamen RM, Connors PM, Rosow CE. Pharmacokinetics of inhaled morphine in normal volunteers. **Anesthesiology 1997; 87:A376.**

36. Denman WT, Rosow D, Hennessy D, Dershwitz M, Rosow CE. Miotic effects of alfentanil, and fentanyl occur at extremely low doses. **Anesthesiology 1997; 87:A316.**

37. Michałowski P, Dershwitz M, Rosow CE, Conlay LA, Chang YC. Total intravenous anesthesia with remifentanil or alfentanil in ambulatory orthopedic surgery carries minimal risk of postoperative nausea and vomiting. **Anesthesiology 1998; 89:A34.**

38. Walsh J, Dershwitz M, Rosow C, Connors PM, Morishige R, Rubsamen R. Intravenous and inhaled morphine pharmacokinetics and pharmacodynamics as measured by pupillometry. **Anesthesiology 1998; 89:A521.**

39. Dershwitz M, Walsh JL, Krause S, Makris N, Gollub R. Using functional magnetic resonance imaging to measure opioid effects in discrete brain regions. Association of University Anesthesiologists Annual Meeting; Pittsburgh, Pennsylvania; May, 1999.

40. Gollub RL, Breiter H, Dershwitz M, Elman I, Kantor H, Gastfriend D, Benson E, Lazar S, Krause S, Makris N, Kennedy D, Campbell T, Weisskoff R, Rosen B: Cocaine dose dependent activation of brain reward circuitry in humans revealed by 3T fMRI. International Conference on Functional Mapping of the Human Brain, 1999.

41. Dershwitz M, Walsh JL, Krause S, Makris N, Gollub R. Using functional magnetic resonance imaging to measure opioid effects in discrete brain regions. **Anesthesiology 1999; 91:A367.**

42. He YL, Walsh J, Denman W, Dershwitz M, Kim J, Rosow C. Pharmacodynamic modeling of the miotic effects of alfentanil in humans measured with infrared pupillometry. Association of University Anesthesiologists Annual Meeting; Rochester, NY; May, 2001.

43. Gollub R, Aquino P, Kong J, Gracely R, Kramet T, Dershwitz M. Reliable intensity and laterality encoding of noxious pressure and heat pain in cortex within single subjects using 1.5T fMRI. Organization for Human Brain Mapping 7th Annual Meeting; Brighton, UK; June, 2001.

44. Aquino P, Kong J, Gracely RH, Kramer T, Dershwitz M, Gollub R. Reliable encoding of brief noxious mechanical stimuli in single subjects using 1.5T fMRI. Society for Neuroscience, 2001.

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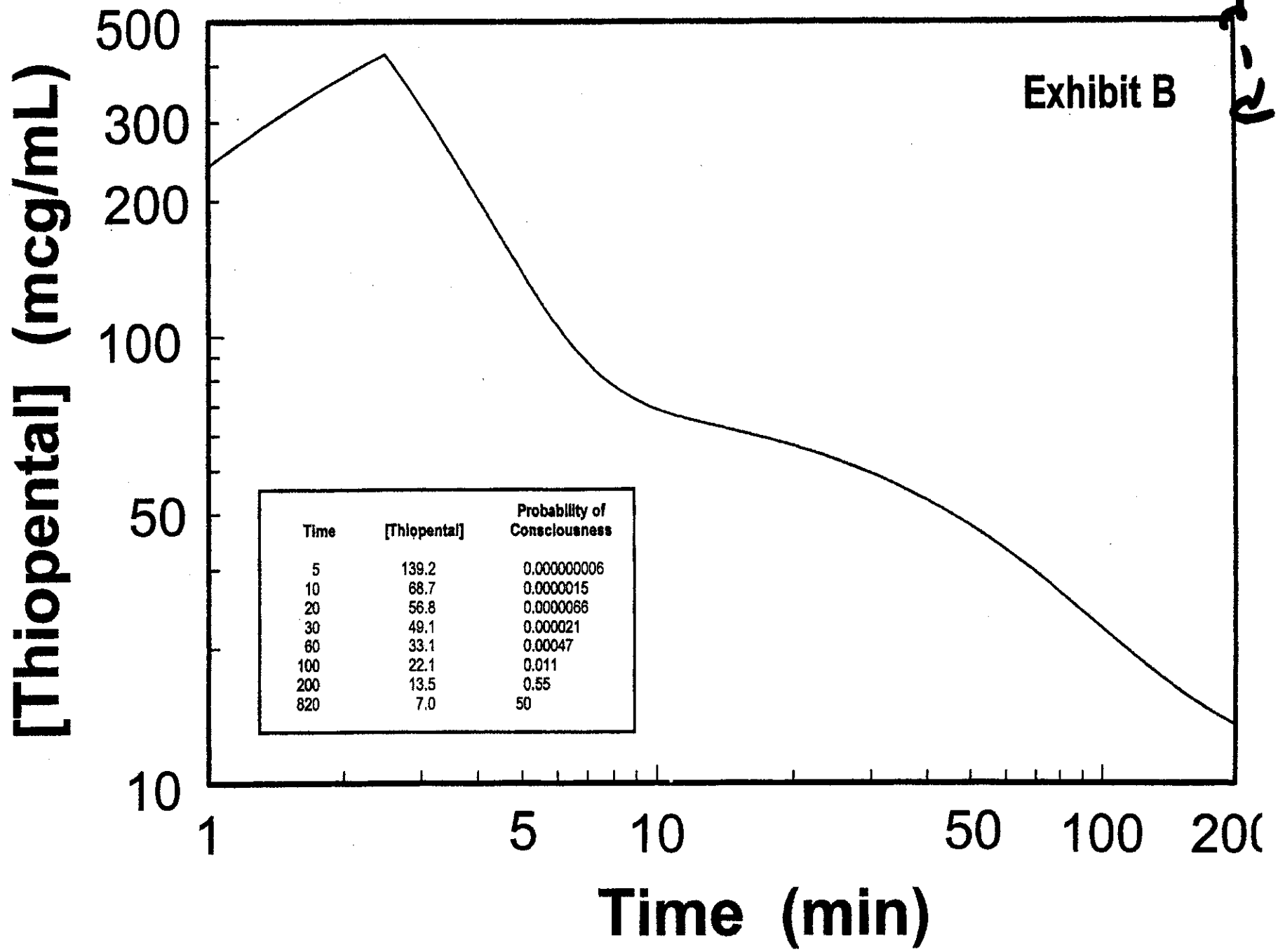
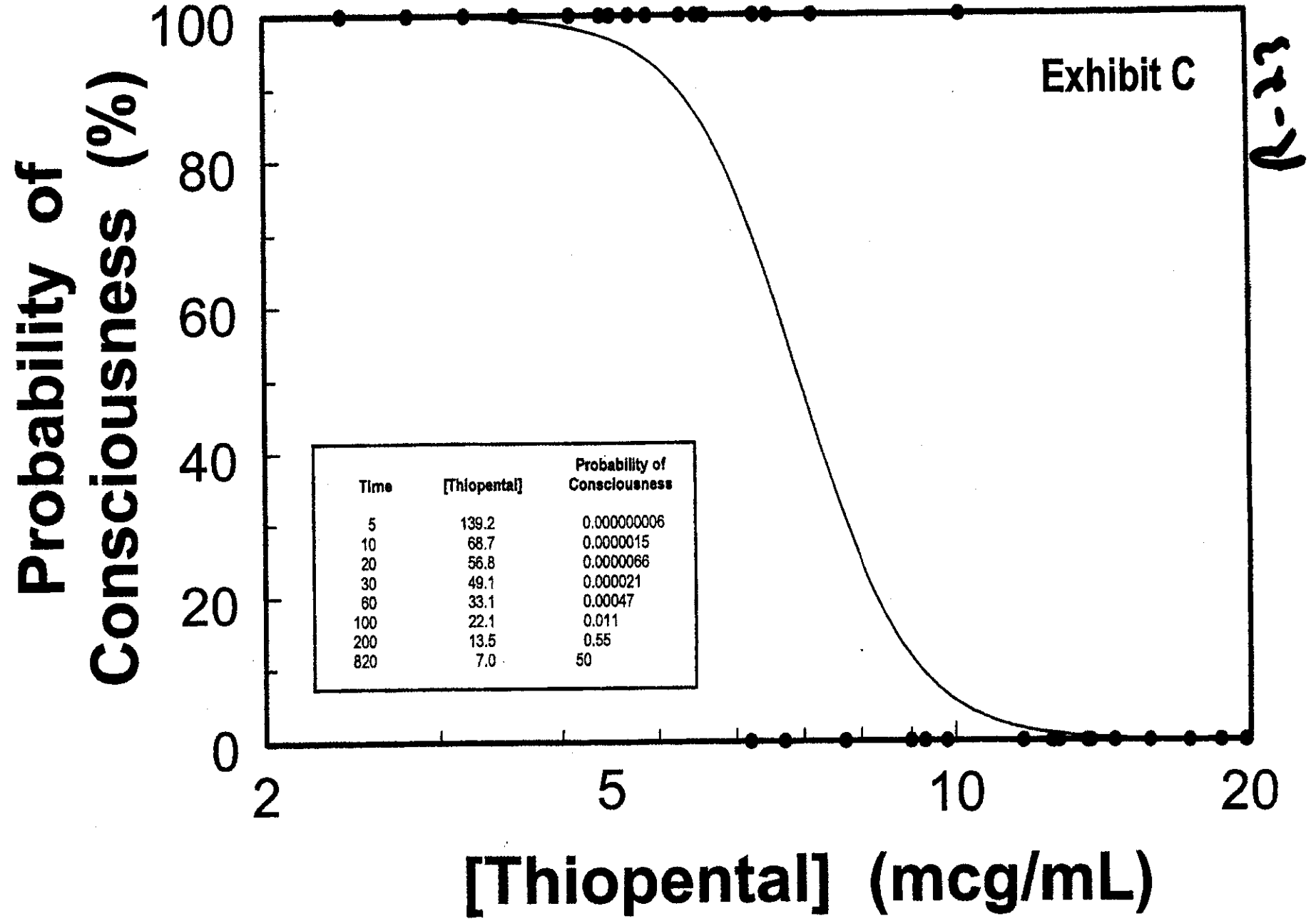


Time	[Thiopental]	Probability of Consciousness
5	139.2	0.000000006
10	68.7	0.0000015
20	56.8	0.0000066
30	49.1	0.000021
60	33.1	0.00047
100	22.1	0.011
200	13.5	0.55
820	7.0	50



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60	33.1	0.00047
100	22.1	0.011
200	13.5	0.55
820	7.0	50

EXHIBIT D

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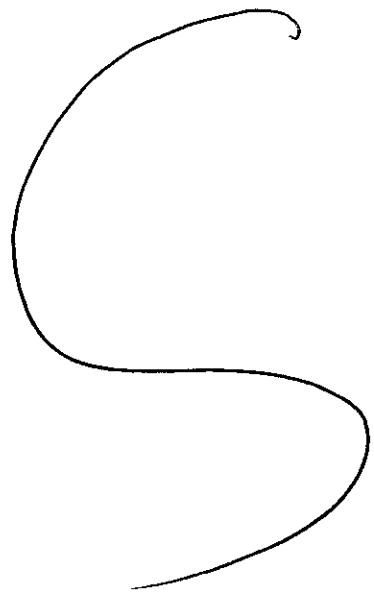

IN THE UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

In Re: Lewis Williams, Appellant	:	
and	:	**Case No. 04-3014**
In Re: John Glenn Roe, Appellant	:	

AFFIDAVIT OF DR. CARL ROSOW, M.D., PH.D.

COMMONWEALTH OF MASSACHUSETTS	:	
	:	**S.S.**
COUNTY OF MIDDLESEX	:	

Affiant, being first duly cautioned and sworn, states as follows:

1. I am Dr. Carl Rosow, an M.D. with a Ph.D. in Pharmacology. I am licensed to practice medicine in the states of Massachusetts and California. I am currently an anesthesiologist at Massachusetts General Hospital and a Professor of Anesthesia at Harvard Medical School. I am certified by the American Board of Anesthesiology. I have done extensive research and written numerous review articles and research papers on the action and time course of anesthetic drugs. A true and accurate copy of my curriculum vitae is attached as Exhibit A.

2. I have reviewed the affidavits of Dr. Mark Heath, M.D. and Dr. Mark Dershwitz, M.D. Ph.D. prepared in this case. I have spoken with Dr. Dershwitz regarding his affidavit. I have not spoken with Dr. Heath. I have also reviewed the curriculum vitae of Dr. Heath that was attached to his affidavit. Dr. Heath has never published a study of a drug on a human being. Dr. Heath has never published a study on a hypnotic drug, muscle relaxant or potassium chloride. Dr. Heath has never published a study of the lethal injection procedure in animals.

3. I do not agree with several of the conclusions contained in Dr. Heath's affidavit. In particular, Dr. Heath's affidavit at paragraph eight states that "it is my opinion held to a reasonable degree of medical certainty that there would be no rational or medically justifiable place in the protocol for pancuronium." It is my opinion, to a reasonable degree of medical certainty, that there is a legitimate use for pancuronium in an execution. Pancuronium prevents involuntary reflex limb movements that may be caused by potassium chloride. Potassium chloride can have the effect of stimulating nerve endings and triggering reflex movements of the limbs. These reflex movements are not

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correlated with consciousness, pain or suffering. A witness to an execution could not distinguish between a "peaceful" or "agonizing" death based upon these reflex movements.

4. Dr. Heath's affidavit at paragraphs ten, seventeen, and eighteen states that an inmate is at a substantial risk of remaining conscious and therefore experiencing pain during an Ohio execution. As stated in Dr. Dershwitz's affidavit, the entire lethal injection procedure takes about four to eight minutes to complete. Based upon the known pharmacology of thiopental, it is my opinion to a reasonable degree of medical certainty that the intravenous injection of 2 grams of thiopental over eighty seconds will produce a profound hypnotic effect (i.e. state of unconsciousness) that would last much longer than the time required to complete the execution. Furthermore, intravenous injection of thiopental at a rate of 1 mL/second (25 milligrams/second) will produce unconsciousness in virtually all persons before the entire 2 gram dose is administered. It is my further opinion, to a reasonable degree of medical certainty, that the continuous infusion of thiopental would not meaningfully change the probability of unconsciousness.

5. In my opinion, anesthesiologists with expertise in the time-course of medication would concur with the findings contained in Dr. Dershwitz's affidavit. Further, no anesthesiologist with expertise in the time-course of medication would concur with the opinions expressed in paragraphs ten, seventeen, and eighteen of Dr. Heath's affidavit.

FURTHER AFFIANT SAYETH NAUGHT

Dr. Carl Rosow, M.D., Ph.D.

Sworn to and subscribed before me on this 12th day of January 2004.

Notary Public, Commonwealth of Massachusetts

CINDY W. RUBIN
Notary Public
Commonwealth of Massachusetts
My Commission Expires 10/[illegible]/2010

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CURRICULUM VITAE

Name: Carl E. Rosow

Home Address: 15 Marshall Terrace, Wayland, Massachusetts 01778

Date of Birth: 18 January 1947

Place of Birth: Detroit, Michigan

Education

1968	A.B.	Oberlin College, Oberlin, Ohio
1973	M.D.	Boston University School of Medicine, Boston
1980	Ph.D.	Boston University Graduate School (Pharmacology)

Postdoctoral Training

1973-1974	Rotating Intern in Medicine, Framingham Union Hospital, Framingham, Massachusetts
1975-1978	Resident in Anesthesia, Massachusetts General Hospital
1977-1978	Postdoctoral Fellowship, National Institutes on Drug Abuse

Licensure and Certification

1974	Massachusetts License Registration
1974	Diplomate, National Board of Medical Examiners
1975	California License Registration
1979	Diplomate, American Board of Anesthesiology
2001	Recertification, American Board of Anesthesiology

Academic Appointments

1975-1978	Clinical Fellow in Anaesthesia, Harvard Medical School, Boston
1978-1982	Instructor in Anaesthesia at Massachusetts General Hospital, Harvard Medical School
1982-1986	Assistant Professor of Anaesthesia, Harvard Medical School
1986-2003	Associate Professor of Anaesthesia, Harvard Medical School
1988-	Adjunct Associate Professor of Pharmacology and Experimental Therapeutics, Boston University School of Medicine
1989-	Associate Professor, Harvard University-Massachusetts Institute of Technology, Division of Health Sciences and Technology, Cambridge
2003-	Professor of Anaesthesia, Harvard Medical School

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STATE'S EXHIBIT A

Hospital Appointments

1978-1981	Assistant in Anesthesia, Massachusetts General Hospital
1978-1984	Assistant in Anesthesia, Massachusetts Eye and Ear Infirmary
1982-1986	Assistant Anesthetist, Massachusetts General Hospital
1987-1993	Associate Anesthetist, Massachusetts General Hospital
1994-	Anesthetist, Massachusetts General Hospital

Massachusetts General Hospital Service Responsibilities

1999-	Industrial Interface Team, Research Operations Improvement, Executive Committee on Research
1999-	Clinical Research Council

Department of Anesthesia, Massachusetts General Hospital

1985-	Clinical Practices and Patient Safety Committee
1987-1993	Chairman, Scientific Advisory Committee, Henry K. Beecher Memorial Research Laboratories
1994-	Anesthesia Executive Committee
1994-	Offensive Behavior Committee
1994-	Anesthesia Executive Committee on Research

Major Committee Assignments

Harvard Medical School

1980-1982	Institutional Review Board
1998-	HST Curriculum Committee
1999-	Medical Education Reform, Working Group on Faculty-Student Relations

Massachusetts General Hospital

1980-1995	Pharmacy Committee
1992-1997	Subcommittee on Human Studies, Committee on Research
1995-	Drug Therapy Committee
1998-	Human Research Committee

Regional

1982-1983	Controlled Substances Advisory Board, Massachusetts Department of Public Health
1982-1984	Pharmacy Committee, Massachusetts Health Council
1983-1984	Prescription Abuse Data Synthesis Project, Massachusetts Department of Public Health

National

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1985	Question Writer, Joint Council on In-Training Examinations, American Board of Anesthesiology/American Society of Anesthesiologists
1985-1991	Question Editor, Joint Council on In-Training Examinations

Major Committee Assignments, continued

National

1985-2000	Advisory Panel on Anesthesiology, U. S. Pharmacopeial Convention
1986-1999	Associate Examiner, American Board of Anesthesiology
1991-2001	Elected Member, Joint Council on In-Training Examinations
1994-1997	ASA Representative to Joint Council on In-Training Examinations
1999-2006	Senior Examiner, American Board of Anesthesiology
2000-	Chair, Anesthesiology Expert Committee, U. S. Pharmacopeia
2000-	Council of Experts, U. S. Pharmacopeia

Professional Societies

1978-	American Society of Anesthesiologists (ASA)
1978-	Massachusetts Society of Anesthesiologists
1979-	Massachusetts Medical Society
1979-1984	Chairman, Committee on Drugs and Therapeutics, Massachusetts Medical Society
1980-1982	American Society of Regional Anesthesia
1980-1993	Eastern Pain Association
1980-1993	American Pain Society
1980-	International Anesthesia Research Society
1981-1983	Representative-at-Large, Eastern Pain Association
1981-1993	Society of Cardiovascular Anesthesiologists
1982-	American Society for Pharmacology and Experimental Therapeutics
1985-1990	Committee on Government Affairs, Society of Cardiovascular Anesthesiologists
1987-2003	Society for Ambulatory Anesthesia
1987-	Elected Member, Association of University Anesthesiologists
1987-1991	New England Society of Anesthesiologists
1988-1993	International Association for the Study of Pain
1992-2000	Board of Directors, Society for Intravenous Anesthesia
1993-1995	Board of Directors, Society for Ambulatory Anesthesia
1993-	Committee on Research, Society for Ambulatory Anesthesia
1994-1995	Chairman, Committee on Research, Society for Ambulatory Anesthesia
1994-1999	Committee on Research, ASA
1995	Consultant, ASA Task Force on Sedation and Analgesia by Non-Anesthesiologists
1998-1999	Subcommittee on Drug Disposition and Anesthetic Action, ASA
2000-	Subcommittee on Anesthetic Action and Biochemistry, ASA

Editorial Boards

1981-	*Pharmacotherapy*
1983-1987	*Journal of Pharmacology and Experimental Therapeutics*
1983-1988	*Intelligence Reports in Anesthesia*
1994-2000	*Anesthesiology*

Ad hoc reviewer for *Anesthesia and Analgesia; Journal of Clinical Anesthesia; New England Journal of Medicine; Pharmacology, Biochemistry, and Behavior; Clinical Pharmacology and Therapeutics*

Awards and Honors

1968	Sigma Xi
1968	Biology Honors, Oberlin College
1978	Sandoz Award in Clinical Pharmacology, Boston University
1978	Second Prize, Residents' Research Competition, Harvard Anaesthesia Center
1987	Elected membership, Association of University Anesthesiologists
1996	Irving M. London Teaching Award, Harvard/MIT Division of Health Sciences and Technology
1997	Robertazzi Memorial Lecturer, New York State Society of Anesthesiologists Postgraduate Assembly
1998	Michael Dykes Distinguished Lecturer, Northwestern University
2000	The Shields Lecturer, University of Toronto
2003	Pre-Clinical Teaching Award, HST Class of 2003, Harvard Medical School
2003	Nominee, Prize for Excellence in Teaching (Years 1 and 2), Harvard Medical School
2004	Elected Scholar, The Academy at Harvard Medical School

Research Interests

1. Clinical and pre-clinical pharmacology of opiates:
   a. Thermoregulatory effects
   b. Cardiovascular and respiratory effects
   c. Tolerance and physical dependence
   d. Evaluation of new analgesic agents
   e. Antagonists and partial agonists
2. Intravenous anesthesia
3. Drug interactions
4. Pharmacokinetic and pharmacodynamic modeling
5. Monitoring of anesthetic drug effect:
   a. Processed EEG
   b. Bispectral index

Teaching Experience

1967-1968	**Teaching Assistant,** Department of Physiology, Oberlin College: Ran general and comparative physiology laboratory for undergraduate courses.
1968-1978	**Graduate Student** in Pharmacology, Division of Medical Sciences, Boston University: Pharmacology laboratory and didactic sessions for medical students.
1978	**Co-Director,** Harvard Medical School Symposium, *Management of Intractable Pain.*
1978-1982	**Instructor in Anaesthesia** at Massachusetts General Hospital, Harvard Medical School: Clinical instruction to anesthesia and surgical residents and medical students; organized lecture series on clinical pharmacology for Department; participant in numerous symposia, workshops, and post-graduate continuing education courses at Harvard and elsewhere.
1982-1986	**Assistant Professor of Anaesthesia,** Harvard Medical School: Clinical Instruction to anesthesia and surgical residents and medical students; visiting professorships; ongoing frequent participation in continuing education courses, symposia, and workshops.
1985-1987	**Lecturer:** Introductory pharmacology lectures to medical students; occasional graduate seminars in pharmacology, Boston University School of Medicine.
1986-2003	**Associate Professor of Anaesthesia,** Harvard Medical School: Clinical Instruction to anesthesia and surgical residents and medical students; visiting professorships throughout the United States and abroad; ongoing frequent participation in continuing education courses, symposia, and workshops.
1987	**Organizer and Moderator,** Department of Anesthesia Teaching Block, *Clinical Pharmacology,* 7 May – 4 June.
1988-	**Adjunct Associate Professor of Pharmacology and Experimental Therapeutics,** Boston University School of Medicine: Faculty Member, *General Medical Pharmacology;* introductory pharmacology lectures to medical students; occasional graduate seminars in pharmacology.
1989-	**Associate Professor,** Harvard-MIT Division of Health Sciences and Technology: Core Faculty Member of HST-150, *Principles of Pharmacology.*
1994-	**Course Director,** HST-150, *Principles of Pharmacology,* Harvard-MIT Division of Health Sciences and Technology.

Teaching Experience, continued

2003- **Professor of Anaesthesia,** Harvard Medical School: Clinical instruction to anesthesia and surgical residents and medical students; visiting professorships throughout the United States and abroad; ongoing frequent participation in continuing education courses, symposia, and workshops.

2004- **Scholar,** The Academy at Harvard Medical School. Participation in innovative curricular programs and ongoing review of undergraduate medical teaching.

Bibliography

Original Articles

1. **Rosow CE**, Miller JM, Pelikan EW, Cochin J. Opiates and thermoregulation in mice. I. Agonists. *J Pharmacol Exp Ther.* 1980; 213: 273-283.

2. Moss J, **Rosow CE**, Savarese JJ, Philbin DM, Kniffen KJ. Role of histamine in the hypotensive action of *d*-tubocurarine in man. *Anesthesiology.* 1981; 55: 19-25.

3. Philbin DM, Moss J, Akins CW, **Rosow CE**, Kono K, Schneider RC, VerLee TR, Savarese JJ. The use of H_1 and H_2 histamine antagonists with morphine anesthesia: A double-blind study. *Anesthesiology.* 1981; 55: 292-306.

4. Kono K, Philbin DM, Coggins CH, Moss J, **Rosow CE**, Schneider RC, Slater EE. Renal function and stress response during halothane or fentanyl anesthesia. *Anesth Analg.* 1981; 60: 552-556.

5. Coté CJ, Goudsouzian NG, Liu LMP, Dedrick DF, **Rosow CE**. The dose response of intravenous thiopental for the induction of general anesthesia in unpremedicated children. *Anesthesiology.* 1981; 55: 703-705.

6. **Rosow CE**, Moss J, Philbin DM, Savarese JJ. Histamine release during morphine and fentanyl anesthesia. *Anesthesiology.* 1982; 56: 93-96.

7. **Rosow CE**, Miller JM, Poulsen-Burke J, Cochin J. Opiates and thermoregulation in mice. II. Effects of opiate antagonists. *J Pharmacol Exp Ther.* 1982; 220: 464-467.

8. **Rosow CE**, Miller JM, Poulsen-Burke J, Cochin J. Opiates and thermoregulation in mice. III. Agonists-antagonists. *J Pharmacol Exp Ther.* 1982; 220: 468-475.

9. Moss J, Philbin DM, **Rosow CE**, Basta SJ, Gelb C, Savarese JJ. Histamine release by neuromuscular blocking agents in man. *Klin Wochenschr.* 1982; 60: 891-895.

10. Philbin DM, Moss J, **Rosow CE**, Akins CW, Rosenberger JL. Histamine release with intravenous narcotics: Protective effects of H_1- and H_2-receptor antagonists. *Klin Wochenschr.* 1982; 60: 1056-1059.

11. **Rosow CE**, Miller JM, Poulsen-Burke J, Cochin J. Opiates and thermoregulation in mice. IV. Tolerance and cross-tolerance. *J Pharmacol Exp Ther.* 1982; 223: 702-708.

12. Philbin DM, Moss J, **Rosow CE**, Savarese JJ. Relevance of plasma histamine levels to hypotension [Letter]. *Anesthesiology.* 1982; 57: 425.

Original Articles, continued

13. Nieminen M-T, Philbin DM, **Rosow CE**, Lowenstein E, Triantafillou A, Levine FH, Buckley MJ. Temperature gradients and rewarming time during hypothermic cardiopulmonary bypass with and without pulsatile flow. *Ann Thorac Surg.* 1983; 35: 488-492.

14. Moss J, **Rosow CE**. Histamine release by narcotics and muscle relaxants in humans. *Anesthesiology.* 1983; 59: 330-339.

15. Tomichek RC, **Rosow CE**, Philbin DM, Moss J, Teplick RS, Schneider RC. Diazepam-fentanyl interaction — Hemodynamic and hormonal effects in coronary artery surgery. *Anesth Analg.* 1983; 62: 881-884.

16. Nieminen M-T, **Rosow CE**, Triantafillou A, Schneider RC, Lowenstein E, Philbin DM. Temperature gradients in cardiac surgical patients — A comparison of halothane and fentanyl. *Anesth Analg.* 1983; 62: 1002-1005.

17. **Rosow CE**, Philbin DM, Keegan CR, Moss J. Hemodynamics and histamine release during induction with sufentanil or fentanyl. *Anesthesiology.* 1984; 60: 489-491.

18. **Rosow CE**. Sufentanil citrate: A new opioid analgesic for use in anesthesia. *Pharmacotherapy.* 1984; 4: 11-19.

19. Silbert BS, **Rosow CE**, Keegan CR, Latta WB, Murphy AL, Moss J, Philbin DM. The effect of diazepam on induction of anesthesia with alfentanil. *Anesth Analg.* 1986; 65: 71-77.

20. Inada E, Philbin DM, Machaj V, Moss J, D'Ambra MN, **Rosow CE**, Akins CW. Histamine antagonists and *d*-tubocurarine-induced hypotension in cardiac surgical patients. *Clin Pharmacol Ther.* 1986; 40: 575-580.

21. O'Keefe RJ, Domalik-Wawrzynski L, Guerrero JL, **Rosow CE**, Lowenstein E, Powell WJ, Jr. Local and neurally mediated effects of sufentanil on canine skeletal muscle vascular resistance. *J Pharmacol Exp Ther.* 1987; 242: 699-706.

22. Okutani R, Philbin DM, **Rosow CE**, Koski G, Schneider RC. Effect of hypothermic hemodilutional cardiopulmonary bypass on plasma sufentanil and catecholamine concentrations in humans. *Anesth Analg.* 1988; 67: 667-670.

23. Philbin DM, **Rosow CE**, Schneider RC, Koski G, D'Ambra MN. Fentanyl and sufentanil anesthesia revisited: How much is enough? *Anesthesiology.* 1990; 73: 5-11.

24. Philbin DM, **Rosow CE**, Schneider RC, Koski G, D'Ambra MN. Fentanyl and sufentanil anesthesia revisited: Establish an effective plasma concentration and achieve it at the right time [Letter]. *Anesthesiology.* 1991; 74: 389-390.

S-11

***Original Articles*, continued**

25. Dershwitz M, **Rosow CE**, DiBiase PM, Zaslavsky A. Comparison of the sedative effects of butorphanol and midazolam. *Anesthesiology*. 1991; 74: 717-724.

26. Philbin DM, **Rosow CE**. Fentanyl and sufentanil anesthesia revisited [Letter]. *J Cardiothorac Vasc Anesth*. 1991; 5: 651.

27. Dershwitz M, **Rosow CE**, DiBiase PM, Joslyn AF, Sanderson PE. Ondansetron is effective in decreasing postoperative nausea and vomiting. *Clin Pharmacol Ther*. 1992; 52: 96-101.

28. Dershwitz M, DiBiase PM, **Rosow CE**, Wilson RS, Sanderson PE, Joslyn AF. Ondansetron does not affect alfentanil-induced ventilatory depression or sedation. *Anesthesiology*. 1992; 77: 447-452.

29. McKenzie R, Sharifi-Azad S, Dershwitz M, Miguel R, Joslyn AF, Tantisira B, Rosenblum F, **Rosow CE**, Downs JB, Bowie JR, Sheahan K, Odell S, Lessin J, DiBiase PM, Nations M. A randomized, double-blind pilot study examining the use of intravenous ondansetron in the prevention of postoperative nausea and vomiting in female patients. *J Clin Anesth*. 1993; 5: 30-36.

30. Strebel S, Frei F, **Rosow CE**, Drewe J. Central nervous system symptoms after intravenous lignocaine: Dose-response during pregnancy. *Eur J Anaesthesiol*. 1993; 10: 101-104.

31. Kaufmann MA, **Rosow CE**, Schnieper P, Schneider M. Prophylactic antiemetic therapy with patient-controlled analgesia: A double-blind, placebo-controlled comparison of droperidol, metoclopramide, and tropisetron. *Anesth Analg*. 1994; 78: 988-994.

32. Dershwitz M, Randel GI, **Rosow CE**, Fragen RJ, Connors PM, Librojo ES, Shaw DL, Peng AW, Jamerson BD. Initial clinical experience with remifentanil, a new opioid metabolized by esterases. *Anesth Analg*. 1995; 81: 619-623.

33. Dershwitz M, **Rosow CE**. The pharmacokinetics and pharmacodynamics of remifentanil in volunteers with severe hepatic or renal dysfunction. *J Clin Anesth*. 1996; 8: 88S-90S.

34. Dershwitz M, Hoke JF, **Rosow CE**, Michalowski P, Connors PM, Muir KT, Dienstag JL. Pharmacokinetics and pharmacodynamics of remifentanil in volunteer subjects with severe liver disease. *Anesthesiology*. 1996; 84: 812-820.

35. Glass PSA, Bloom M, Kearse L, **Rosow C**, Sebel P, Manberg P. Bispectral analysis measures sedation and memory effects of propofol, midazolam, isoflurane, and alfentanil in healthy volunteers. *Anesthesiology*. 1997; 86: 836-847.

5-12

***Original Articles*, continued**

36. Holce JF, Shlugman D, Dershwitz M, Michalowski P, Malthouse-Dufore S, Connors PM, Martel D, **Rosow CE**, Muir KT, Rubin N, Glass PSA. Pharmacokinetics and pharmacodynamics of remifentanil in persons with renal failure compared with healthy volunteers. *Anesthesiology*. 1997; 87: 533-541.

37. Gan TJ, Glass PS, Windsor A, Payne F, **Rosow C**, Sebel P, Manberg. BIS Utility Study Group. Bispectral index monitoring allows faster emergence and improved recovery from propofol, alfentanil, and nitrous oxide anesthesia. *Anesthesiology*. 1997; 87: 808-815.

38. Kearse Jr LA, **Rosow C**, Zaslavsky A, Connors P, Dershwitz M, Denman W. Bispectral analysis of the electroencephalogram predicts conscious processing of information during propofol sedation and hypnosis. *Anesthesiology*. 1998; 88: 25-34.

39. Dershwitz M, Conant JA, Chang Y, **Rosow CE**, Connors PM. A randomized, double-blind, dose-response study of ondansetron in the prevention of postoperative nausea and vomiting. *J Clin Anesth*. 1998; 10: 314-320.

40. Gan TJ, Glass PS, Sigl J, Sebel P, Payne F, **Rosow C**, Embree P. Women emerge from general anesthesia with propofol/alfentanil/nitrous oxide faster than men. *Anesthesiology*. 1999; 90: 1283-1287.

41. Denman WT, Swanson EL, Rosow D, Ezbicki K, Connors P, **Rosow CE**. Pediatric evaluation of the bispectral index (BIS) monitor and correlation of BIS with end-tidal sevoflurane concentration in infants and children. *Anesth Analg*. 2000; 90: 872-877.

42. Dershwitz M, Walsh JL, Morishige RJ, Connors PM, Rubsamen RM, Shafer SL, **Rosow CE**. Pharmacokinetics and pharmacodynamics of inhaled versus intravenous morphine in healthy volunteers. *Anesthesiology*. 2000; 93: 619-628.

43. Dershwitz M, Michalowski P, Chang YC, **Rosow CE**, Conlay LA. Postoperative nausea and vomiting following total intravenous anesthesia with propofol and remifentanil or alfentanil. How important is the opioid? *J Clin Anesth*. 2002; 14: 275-278.

44. Rubin P, Xie Z, **Rosow C**, May J. Rapid absorption of tumescent lidocaine above the clavicles. *Plast Reconstr Surg*. 2003: In press.

45. He Yan-Ling, Rosow D, Kim J, Walsh JL, Denman WT, Dershwitz M, **Rosow CE**. Simultaneous pharmacokinetic-pharmacodynamic modeling of opioid-induced pupil constriction. *Clin Pharmacol Ther*. 2004: In press..

S-13

Proceedings of Meetings

1. Meyer RE, Cochin J, Miller JM, **Roscow C.** The relationship between aggression and host differences in vulnerability to opiate addiction in the white mouse. *In: Proceedings 32nd Meeting, Committee on Problems of Drug Dependence, 1970.* Washington, D. C.: National Academy of Sciences/National Research Council, Division of Medical Sciences, 1970: 6660-6669.

2. Cochin J, Miller JM, **Roscow CE,** Greil R, Poulsen JL. The influence of the mode of morphine administration on tolerance and dependence. In: *Problems of Drug Dependence, 1979.* Proceedings 41st Annual Scientific Meeting, Committee on Problems of Drug Dependence, 1979. Research Monograph 27, National Institute on Drug Abuse. Washington, D. C.: U. S. Government Printing Office, 1980: 36-47.

3. Philbin DM, **Roscow CE,** Schneider RC, D'Ambra M, Freis E, Machaj V. Sufentanil: A synthetic narcotic for total intravenous anesthesia? *In:* Droh R, Erdmann W, Spintge R, Eds. *Anaesthesia — Innovations in Management.* Symposium, Innovations in Management and Technic and Pharmacology. Berlin: Springer-Verlag, 1985: 150-153.

4. **Roscow CE.** Butorphanol: An overview. Symposium Proceedings, Butorphanol Tartrate: The Anesthetic Uses of an Agonist-Antagonist Agent. *Clin Anesthesiol.* 1986; 4: S 5-8.

5. **Roscow CE.** Acute and chronic tolerance: Relevance for clinical practice. *In: Problems of Drug Dependence.* Proceedings 48th Annual Scientific Meeting, Committee on Problems of Drug Dependence, 1986. Research Monograph 76, National Institute on Drug Abuse. Washington, D. C.: U. S. Government Printing Office, 1987: 29-34.

6. **Roscow CE.** The clinical usefulness of agonist-antagonist analgesics in acute pain. Proceedings, WHO Symposium on Agonist-Antagonist Analgesics, 1986. *Drug Alcohol Depend.* 1987; 20: 329-337.

7. **Roscow CE.** Clinical pharmacology of alfentanil. *In:* Hug C, Van Aken H, Eds. *New Developments in Drugs Used in Anaesthesia.* Proceedings of the Satellite Symposium, 1990 European Congress of Anaesthesiology. Bussum, The Netherlands: Medicom Europe. 1991: 35-41.

8. **Roscow C.** Pharmacokinetics and pharmacodynamics of remifentanil. *In:* Mori K, Ohmura A, Toyooka H, *et al.*, Eds. *New Balanced Anesthesia.* Excerpta Medica International Congress Series 1164. Amsterdam: Elsevier, 1998: 19-26.

5-14

Reviews, Chapters, and Editorials

1. **Rosow CE.** Book Review: Narotic Analgesics in Anesthesiology. *Anesthesiol Rev.* 1982; 9(6): 41-42.

2. **Rosow CE.** Effects of metoprolol and propranolol on lidocaine elimination [Commentary]. *Intelligence Reports in Anesthesia.* 1983; 1(1): 10-11.

3. Philbin DM, **Rosow CE,** D'Ambra M, Freis ES, Schneider RC. Hormonal changes during narcotic anesthesia and operation. *In:* Estafanous FG, Ed. *Opioids in Anesthesia.* Boston: Butterworth Publishers, 1984: 70-74.

4. **Rosow CE,** Keegan CR, Latta WB, Philbin DM. Alfentanil for use in short surgical procedures. *In:* Estafanous FG, Ed. *Opioids in Anesthesia.* Boston: Butterworth Publishers, 1984: 93-97.

5. **Rosow CE.** Spinal opiate receptor systems mediating antinociception [Commentary]. *Intelligence Reports in Anesthesia.* 1984; 1(4): 6-7.

6. **Rosow CE.** The pharmacokinetics of heroin in patients with chronic pain [Commentary]. *Intelligence Reports in Anesthesia.* 1984; 2(3): 14-15.

7. **Rosow CE.** Alfentanil. *In:* Stanley TH, Petty WC, Eds. *Anesthesiology: Today and Tomorrow.* Boston: Martinus Nijhoff Publishers, 1985: 75-78.

8. **Rosow CE.** Sufentanil. *In:* Stanley TH, Petty WC, Eds. *Anesthesiology: Today and Tomorrow.* Boston: Martinus Nijhoff Publishers, 1985: 79-81.

9. **Rosow CE.** Agonist-antagonists and their receptors. In: Stanley TH, Petty WC, Eds. *Anesthesiology: Today and Tomorrow.* Boston: Martinus Nijhoff Publishers, 1985: 83-92.

10. **Rosow CE.** Inhibition of adrenal steroidogenesis by etomidate [Commentary]. *Intelligence Reports in Anesthesia.* 1985; 2(5): 4-5.

11. **Rosow CE.** Newer synthetic opioid analgesics. *In:* Smith G, Covino BG, Eds. *Acute Pain.* London: Butterworth & Co., 1985: 68-103.

12. **Rosow CE.** Intramuscular meptazinol and morphine in postoperative pain [Commentary]. *Intelligence Reports in Anesthesia.* 1985; 3(2): 10-11.

13. **Rosow CE.** Cardiovascular effects of narcotics. *In:* Covino BG, Fozzard HA, Rehder K, Strichartz G, Eds. *Effects of Anesthesia.* Clinical Physiology Series. Bethesda MD: The American Physiological Society, 1985: 195-205.

14. **Rosow CE.** Behavioral studies with anxiolytic drugs [Commentary]. *Intelligence Reports inAnesthesia.* 1986; 3(5): 14-15.

S-15

***Reviews, Chapters, and Editorials*, continued**

15. **Roesow CE.** Ketoprofen: A review of its pharmacologic and clinical properties [Commentary]. *Pharmacotherapy.* 1986; 6: 102.

16. **Roesow CE.** Cardiovascular effects of opioid anesthesia. *Mt Sinai J Med.* 1987; 54: 273-376.

17. **Roesow CE.** Misuse of psychoactive drugs by physicians and medical students [Commentary]. *Intelligence Reports in Anesthesia.* 1987; 4(4): 6-7.

18. **Roesow CE.** Cholecystokinin may modulate memory processing [Commentary]. *Intelligence Reports in Anesthesia.* 1987; 5(2): 5.

19. **Roesow CE.** Book Review: Drugs in Anaesthesia: Mechanisms of Action. *N Engl J Med.* 1987; 317: 905.

20. **Roesow CE.** Butorphanol in perspective. *Acute Care.* 1988; 12 (Suppl 1): 2-7.

21. Adler MW, Geller EB, **Roesow CE,** Cochin J. The opioid system and temperature regulation. *Ann Rev Pharmacol Toxicol.* 1988; 28: 429-449.

22. **Roesow CE.** Hypovolemia alters effects of benzodiazepine [Commentary]. *Intelligence Reports in Anesthesia.* 1988; 6(2): 10-11.

23. **Roesow CE.** Alfentanil. *Semin Anesth.* 1988; 7 (2): 107-112.

24. **Roesow CE.** Newer opioid analgesics and antagonists. *Anesthesiol Clin N Amer.* 1988; 6(2): 319-333.

25. **Roesow CE.** Agonist-antagonist opioids: Theory and clinical practice. *Can J Anaesth.* 1989; 36(3): S5-8.

26. **Roesow CE.** Perioperative uses of opioids. *Curr Opin Anaesthesiol.* 1989; 2: 448-452.

27. Alfillé PH, **Roesow CE.** Opioid antagonists. *Int Anesthesiol Clin.* 1991; 29(2): 83-92.

28. **Roesow CE,** Eckhardt WF. The pharmacology of cardiopulmonary bypass. *In:* Katz RL, Ed. *Anesthesia and the Circulation II.* Semin Anesth. 1991; 10(2): 122-128.

29. **Roesow CE.** Remifentanil: A unique opioid analgesic [Editorial views]. *Anesthesiology.* 1993; 79: 875-876.

30. **Roesow CE.** Pharmacology of intravenous analgetic agents. *In:* Rogers M, Tinker J, Covino BG, Longnecker D, Eds. *Principles and Practice of Anesthesiology.* St. Louis: The Mosby Company. 1993: 1155-1181.

5-16

Reviews, Chapters, and Editorials, continued

45. **Rosow C.** Drug interactions: Opioids and sedative hypnotics. *In:* Stanley TH, Egan TD, Eds. *Anesthesia for the New Millenium.* Dordrecht: Kluwer Academic Publishers, 1999: 165-170.

46. Kelly SJ, Myles PS, Bain D, **Rosow C,** Ramsay J. Case conference: Intraoperative bispectral index monitoring and early extubation after cardiac surgery in patients with a history of awareness under anesthesia. *J Cardiothorac Vasc Anesth.* 2000; 14: 726-730.

47. **Rosow C.** Drug interactions. *In:* Barash PG, Cullen BF, Stoelting RK, Eds. *Clinical Anesthesia, 4th Ed.* Philadelphia: Lippincott Williams & Wilkins, 2001: 1311-1326.

48. **Rosow C,** Manberg PJ. Bispectral index monitoring. *In:* Wilson WC, Ed. *Monitoring during Critical Events.* Anesthesiology Clinics of North America. Philadelphia: W. B. Saunders, 2001; 19: 947-966.

49. Rooke GA, Reves JG, **Rosow C.** Anesthesiology and geriatric medicine. Mutual needs and opportunities [Editorial]. *Anesthesiology.* 2002; 96: 2-4.

50. Brenner GJ, Mao J, **Rosow CE.** The opioid receptors. *In:* Antognini JF, Carstens E, Raines DE, Eds. *Contemporary Clinical Neuroscience: Neural Mechanisms of Anesthesia.* Totowa, New Jersey: Humana Press, 2002: 413-425.

51. Mayfield J, **Rosow CE.** Anesthesia for the outpatient. *In:* Healy TEJ, Knight PR, Eds. *Wylie and Churchill-Davidson's A Practice of Anaesthesia, 7th Ed.* London: Arnold Publishers, 2003: 1021-1036.

52. Stein C, **Rosow CE.** Analgesics: Receptor ligands and opiate narcotics. *In:* Maze M, Evers AS, Eds. *Anesthetic Pharmacology: Physiologic Principles and Clinical Practice. A Companion to Miller's Anesthesia.* Philadelphia: Churchill Livingstone, 2004: 457-471.

S-17

Thesis

1. **Rosow CE.** *Opiates and Thermoregulation in the Mouse.* Doctoral Dissertation. Boston: Boston University Graduate School, 1980.

Nonprint Materials

1. **Rosow CE.** *Plasma histamine levels following fentanyl or morphine in man.* Audiovisual Cassette Report, 7th World Congress of Anaesthesiologists, Hamburg, Germany, 1980. New Brunswick NJ: Educational Library, Janssen Pharmaceutica, Inc., 1981. International distribution.

2. Philbin DM, **Rosow CE.** *High-dose fentanyl anesthesia for cardiac surgery.* Medical Motion Picture. New Brunswick NJ: Janssen Pharmaceutica, Inc., 1981.

3. **Rosow CE.** *New drugs: Pharmacology of sufentanil and alfentanil. Audio-Digest Anesthesiology.* 1985; 27(8). Audio cassette of lecture sponsored by University of Utah School of Medicine; national distribution.

4. Cooper J, Latta W, **Rosow CE.** *Anesthesia machine checkout.* ASA Risk Management Video Cassette Series. 1985. National distribution.

5. **Rosow CE,** White PF, Latta W, Keegan CR. *Moment to moment [Alfentanil anesthesia for outpatient surgery].* Medical Motion Picture. New Brunswick NJ: Janssen Pharmaceutica, Inc. 1986.

6. **Rosow CE.** *Review of basic pharmacokinetics.* Resident Videotape Library. Boston: Department of Anesthesia, Massachusetts General Hospital, 1987.

7. **Rosow CE,** Leslie J. *Zofran (ondansetron HCl) injection: An innovation for the prevention of postoperative nausea and vomiting.* Medical Motion Picture. New York: NCM Publishers, 1994.

8. **Rosow CE.** Impact of short-acting anesthetics. *Audio-Digest Anesthesiology.* 1998; 40(24). Audio cassette of lecture sponsored by New York State Society of Anesthesiologists; national distribution.

9. **Rosow CE.** *Bispectral index: Clinical presentation.* Medical Motion Picture. Newton, Massachusetts: Aspect Medical Systems, 1998.

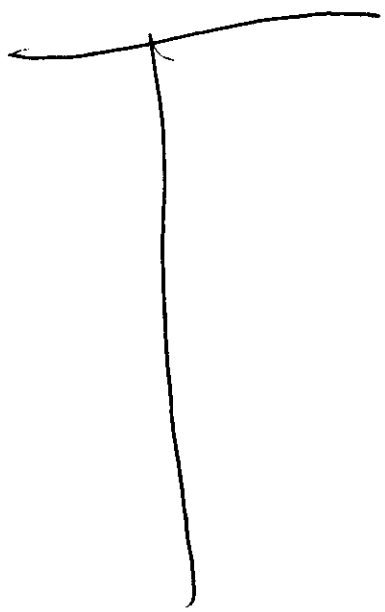
S-18

Abstracts

1. Greenwald SD, Glass PS, Payne FB, **Rosow CE**, Sebel PS, Devlin PH. Changes in heart rate variability predict responses during anesthesia. 51st Annual Meeting, American Society of Anesthesiologists, 1998. *Anesthesiology*. 1998; 89(3A): A-898.

2. He Y-L, Walsh JL, Denman WT, Kim J, **Rosow CE**. Pharmacodynamic modeling of the miotic effects of alfentanil in humans measured with infrared pupillometry. 54th Annual Meeting, American Society of Anesthesiologists, New Orleans, October 2001.

3. He Y-L, Connors PM, Rosow DE, **Rosow CE**. Dose-dependent bioavailability of intranasal butorphanol in surgical patients. 31st Annual Meeting, American College of Clinical Pharmacology, San Francisco, September 2002.



experience as a forensic pathologist, what is your estimate or what is your opinion regarding the likelihood of intraoperative awareness, given the dosages that are administered and the manner in which the drugs are administered?

A. Yes. In my opinion, the phenomenon of intraoperative awareness would be essentially impossible in this situation because of the large quantities of drugs, especially the sodium Pentothal, that are given so that there is -- we're not talking about putting someone to sleep enough to operate on them and having them possibly wake up because not enough drug is given. We're talking about a situation where excessive quantities of drugs are given to ensure that the person is unconscious and stays that way. And so because of the large quantity of the sodium Pentothal, this person would not wake up during the course, during the midst of something because they have much more drug in their system than would be utilized in a surgical procedure.

Q. Thank you. That's all the questions I have.

THE COURT: Okay. Cross?

MR. MEARS: Yes, sir.

FURTHER CROSS-EXAMINATION

BY MR. MEARS:

Q. Dr. Sperry, then, if I understand your testimony,

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the injection of the Pavulon in the dosage that has been described in the -- which is in the part of the record in this case -- serves no purpose other than to prevent someone from watching the body twitch or enter in to seizures; is that correct?

A. Essentially, yes. The Pavulon -- if that were the only drug that were given, someone would be paralyzed immediately but would remain conscious if that were the first drug. And they would die in the same way, from asphyxia, because they could not breathe. It's a different mechanism because the Pavulon affects the muscles whereas the sodium Pentothal affects the brain.

But in the protocol itself the administration of the Pavulon as the second drug is meant specifically, as you said, Mr. Mears, to paralyze all the muscles of the body so that any involuntary twitching or jerking that may occur as part of the dying process, or seizures which are very common in anyone who dies for any sort of reason, well into the dying process; that is, when their brain is shut down, the body may involuntarily undergo muscular seizures. And that's really what the Pavulon is meant for is to paralyze all the muscles such that those outwardly aesthetically unpleasant things are not seen and do not occur.

Q. Dr. Sperry, you had indicated that you had actually witnessed two of the executions; is that correct?

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